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View of Health and Disease Based on a Rise and Fall in the Levels of Life with Cycles in Vitamin Tides*

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VARIATIONS in susceptibility and resistance to disease have long been recognized as of paramount importance in determining individual health levels. The controlling factors for these variations have been but little understood, and prophylactic procedures have not been able to diminish materially the rate of apparent increase in diseases of the heart and circulatory system, and those of some other organs.

As an approach to the presentation of some new data I would suggest the viewpoint, at least for this consideration, that instead of individuals dying chiefly at this time from degenerative diseases we think of them as getting the degenerative diseases in many instances because they are in the process of dying.

This immediately raises the question as to why they are in the process of physical degeneration or death. It apparently is not simply a case of the running down of a physico-chemical mechanism since we have a series of cycles of degeneration, and when we compare the characteristics of the mortality and morbidity curves throughout a series of annual seasons we find that in various parts of the world there is remarkable constancy in the nature of the curves. This will be seen clearly in Figure I, which presents curves for mortality rates for pneumonia and heart disease for the United States, England and Wales, and New South Wales (Australia), for comparison. The similarity will immediately be seen to be most striking whether reading across the page or up and down. There is, in general, a rise in mortality in winter and a fall in summer. Our concern is why.

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COMPARISON OF THE MORTALITY RATES BY MONTHS FOR THE UNITED STATES OF AMERICA, ENGLAND AND WALES AND AUSTRALIA

PNEUMONIA U. S. A. Jan. 1923 to Dec. 1927
Eng. & W. Oct. 1923 to Sept. 1928
Austr. Jan. 1924 to Dec. 1929

HEART U. S. A. Jan. 1925 to Dec. 1927
Eng. & W. Oct. 1923 to Sept. 1928
Austr. Jan. 1928 to Dec. 1929

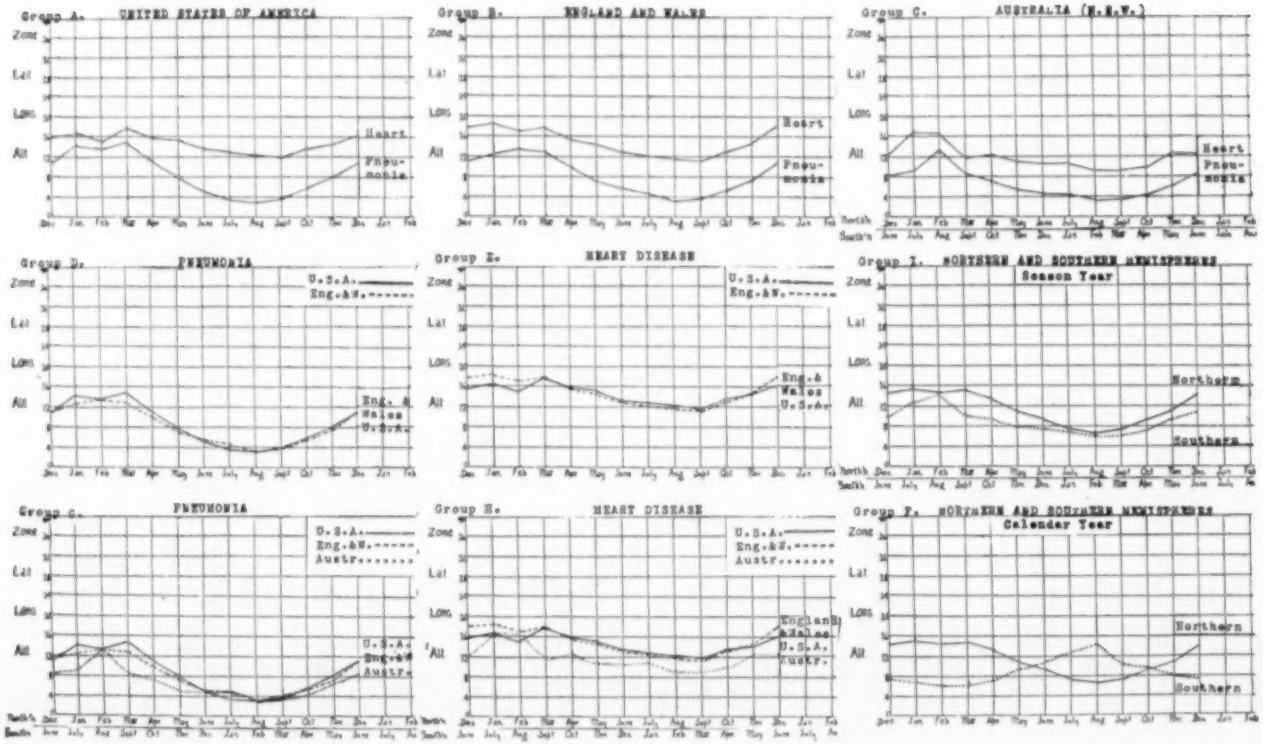


FIGURE I — Seasonal variation in the severity of pneumonia and heart disease is shown to be the same in general for United States, England and Wales, and Australia. Such common results probably have common causes.

It is clear that we are dealing with a force or forces fundamental to life itself, having an expression which bears a distinct relationship to seasons. This rise and fall in the level of life has an almost endless variety of expressions. Since animal life can only exist by using as nutrition directly or indirectly organic compounds developed by plant life, and the plant can use only binary compounds which it builds into ternary and higher compounds, we will look for characteristics of the plant foods to find, if possible, factors that will be related directly and indirectly to the characteristics of the morbidity and mortality data.

In order to make the problem still more specific it seems important to study the characteristics of those products which are most efficient in maintaining both life and physical development. There are many different types of plant foods available for the sustenance of life, both on the land and in the sea, all of which go back directly or indirectly to the chlorophyll of plant life.

It is of particular significance that the great group of the animal kingdom constituting the mammalia are characterized by their dependence upon milk for a period of growth in early life. We have in this fluid the only single food capable of sustaining life and growth, and a product that is remarkably uniform, regardless of the species from which it is obtained. Since milk contains the essentials for life and is the product of plant life, it may and probably does contain expressions of variation in those controlling factors which are involved in the rise and fall in the levels of life, for it contains the elements which maintain life.

The products of the pasture must contain essentials for life, both mineral and accessory, and since so many varieties of plant life can provide the requirements for milk, we probably have in milk the best index for studying these requirements in fluids.

The last two decades, and particularly the last few years, have rapidly increased our knowledge of the accessory food factors—those obscure products which make the difference in the levels of life, for when they are decreased below a certain minimum life cannot exist. These activators or vitamins may be divided into two groups, the water soluble and the fat soluble; while both are essential and both are subject to fluctuations, our chief emphasis in this review will be centered on the group which is most difficult to obtain, namely, the fat soluble vitamins. Contrary to the general conception, the sources of some of the fat soluble vitamins and activators are actually very restricted. Being fat soluble, they are found only in the small amount of fat that is present in growing plants and in certain of the fats of animals, chiefly stored there from plant life.

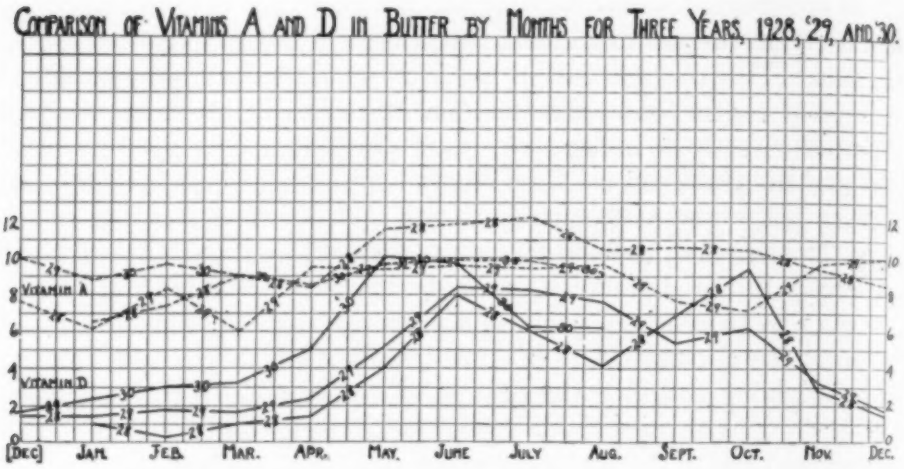

COMPARISON OF VITAMINS A AND D IN BUTTER BY MONTHS FOR THREE YEARS, 1928, '29, AND '30.
VITAMIN A
VITAMIN D
[DEC] JAN. FEB. MAR. APR. MAY. JUNE JULY AUG. SEPT. OCT. NOV. DEC.

FIGURE II—Average levels of vitamins A and D for a 5-state area

It now seems probable that the principal reason milk is the infant food of so large a group of the animal kingdom is because the parent is able to take these fat soluble factors from plant life, or from the tissues of animals in which they have been stored, and make them available in the suspended fat of the breast food. The variations in mineral content of milk produced under varying conditions are found to be very much less than those in both the water soluble and fat soluble activators, both of which are essential. We are, however, primarily concerned with the variations in the fat soluble vitamins. The fat soluble activators which are chiefly responsible for mineral utilization are found in large quantities in only two important sources of food, the fat of some milk and the oils of some fishes.

Since mineral utilization is essential for the building and maintenance of all tissues of the body, particularly the bones and teeth, we are led at once to place great importance on those activating substances without which the minerals, though present, are not available for the animal body.

I am carrying out an extensive investigation on the variations in the levels of these activating substances in the fats of milk. This involves a study of the level of the fat soluble activators in dairy products as obtained from many countries throughout the world. Samples are being received from countries in both Northern and Southern Hemispheres, regularly monthly, weekly or every 2 weeks. The Alaska products include reindeer milk, butter and cheese, beside marine-life oils. The number of butter and cream samples received during the summer season this year reached 700 per month. It is ex-

ceedingly significant that there is evidence of a seasonal cycle in practically all of the countries of the world so far studied.

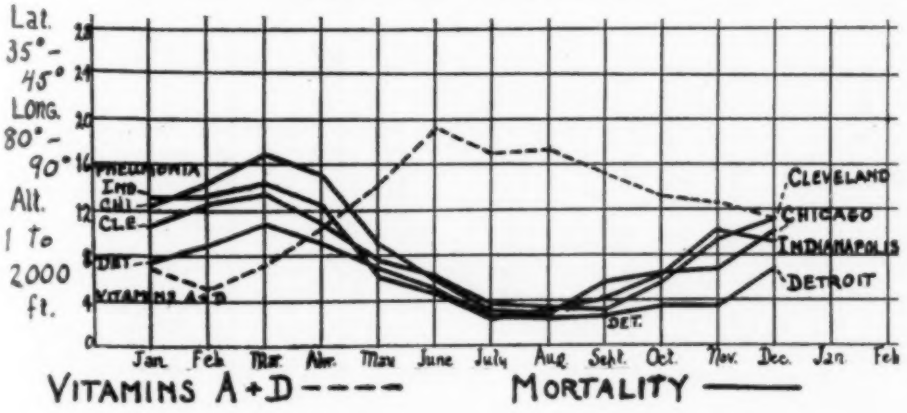
In Figure II will be seen graphs for the average level by months for both vitamins A and D for a 5-state area for 1928, 1929, and 9 months of 1930. The vitamin A level is shown by the broken line and is the average for all samples for this area, and vitamin D is shown by the solid line. The outstanding feature is the low level of available fat soluble vitamins in the dairy products from November to May in many districts in the northern latitudes where the spring or summer rise comes much later than in the less northerly latitudes. Note that the vitamin levels for 1929 are shown to be higher than 1928 and higher for 1930 than for 1929.

In Figure III we see the relation of deaths from pneumonia in 4 cities to the level of a factor obtained by adding the vitamin units A and D. The curve for deaths from pneumonia is shown by the solid line and the vitamin A plus D curve by the broken line. It will be seen that there is a remarkable similarity in the pneumonia curves for these various cities, all having their high point in the late winter and the low point in the late summer; also, that in general these factors are in opposite phase to the vitamin level as expressed in the butter fats obtained throughout the months for this area.

The finding of such a relationship for one district may be coincidence. It is important to apply the principle to many districts. This I have accomplished by dividing the United States and Canada into 16

FIGURE III—RELATION OF DEATHS FROM PNEUMONIA IN FOUR CITIES TO LEVEL OF VITAMINS A PLUS D BY MONTHS

OHIO, INDIANA, ILLINOIS, MICHIGAN, AND WISCONSIN



RELATION OF DEATHS FROM PNEUMONIA AND HEART DISEASE TO LEVEL OF VITAMINS A+D BY MONTHS. UNITED STATES OF AMERICA AND CANADA BY GEOGRAPHIC DISTRICTS.

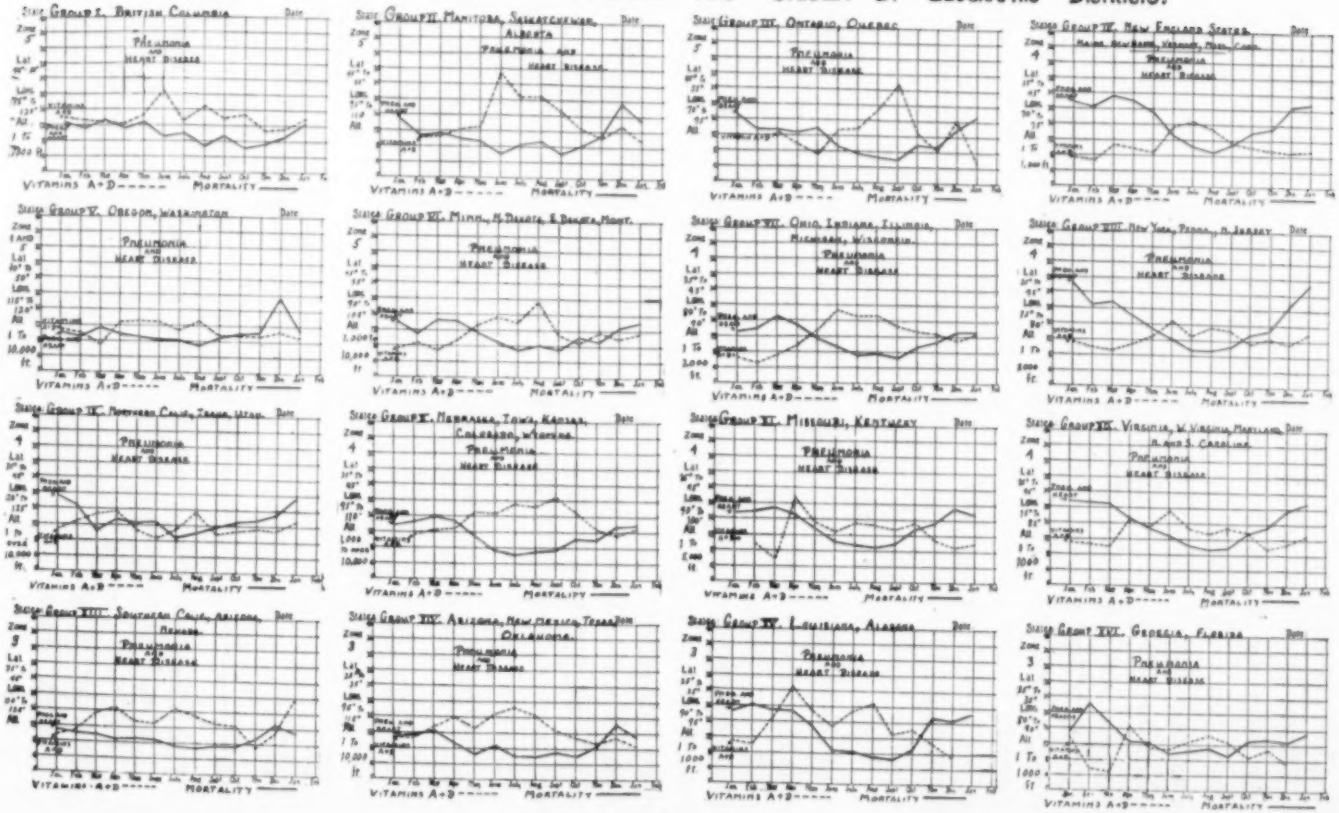

State Group I. British Columbia
Pneumonia and Heart Disease
Vitamins A+D
Mortality
State Group II. Manitoba, Saskatchewan, Alberta
Pneumonia and Heart Disease
State Group III. Ontario, Quebec
Pneumonia and Heart Disease
State Group IV. New England States
Maine, New Hampshire, Vermont, Mass., Conn.
Pneumonia and Heart Disease
State Group V. Oregon, Washington
Pneumonia and Heart Disease
State Group VI. Minn., N. Dakota, S. Dakota, Mont.
Pneumonia and Heart Disease
State Group VII. Ohio, Indiana, Illinois, Michigan, Wisconsin
Pneumonia and Heart Disease
State Group VIII. New York, Penna., N. Jersey
Pneumonia and Heart Disease
State Group IX. Northern Calif., Texas, Utah
Pneumonia and Heart Disease
State Group X. Nebraska, Iowa, Kansas, Colorado, Wyoming
Pneumonia and Heart Disease
State Group XI. Missouri, Kentucky
Pneumonia and Heart Disease
State Group XII. Virginia, W. Virginia, Maryland, N. and S. Carolina
Pneumonia and Heart Disease
State Group XIII. Southern Calif., Arizona, Nevada
Pneumonia and Heart Disease
State Group XIV. Arizona, New Mexico, Texas, Oklahoma
Pneumonia and Heart Disease
State Group XV. Louisiana, Alabama
Pneumonia and Heart Disease
State Group XVI. Georgia, Florida
Pneumonia and Heart Disease

FIGURE IV

large geographic areas in the general order of their physical location as shown in Figure IV.

The solid line is a composite curve showing the deaths from pneumonia and heart disease and the broken line shows vitamin A plus D as expressed in the data obtained from the analyses of the butter and cream samples received month by month in 1929 from many places. In general when the vitamin curve is low the mortality curve is high.

There are two great sources of fat soluble food activators, namely the pastures of the sea and those of the land. Many people have the opinion that fish oil, particularly cod liver oil, would be a complete substitute for the fat soluble vitamins of land plant origin. In my clinical and technical investigations of the activators for inducing mineral metabolism, I have continually found evidence indicating that cod liver oil contains products that are very seriously toxic to humans and other land animals and can do much harm when given in large doses, even only as large as frequently advocated.

If it be true that we are dealing in these matters with factors that are related as cause and effect, it should be true also that data would readily be obtainable, throwing light on this whole problem by changing the incidence of morbidity and mortality as a result of administering or utilizing butter fat vitamins during periods of such low vitamin tides. Since dental caries is said to be the most universal disease in the world and is so important because of its significance as a nutritional disturbance, its prevention becomes one of the prime needs in any program for health betterment.

A study was made of 200 individuals during the fall, winter and spring of 1929–1930, on the basis of the development of dental caries (Figure V). Diagnosis included the use of X-rays at different periods and detailed instrumental examination. One group received no additional activators to those available in their regular dietary. Those in this group are shown for the different age periods by the dotted line; the solid line shows the number of cavities per individual in the various age groups for those receiving additional activators provided them each week in capsule form. It will be seen that there is a very marked difference in extent of dental caries of the two groups, amounting to tenfold as many cavities in those not receiving the additional activators as in those receiving them. In addition to the activators there was considerable counsel given regarding the selection of the dietary in general.

In 20 individuals between the ages of 10 and 20 not receiving additional activators, there was a total of 143 cavities when examined in the late spring and early summer of 1930, whereas in the group re-

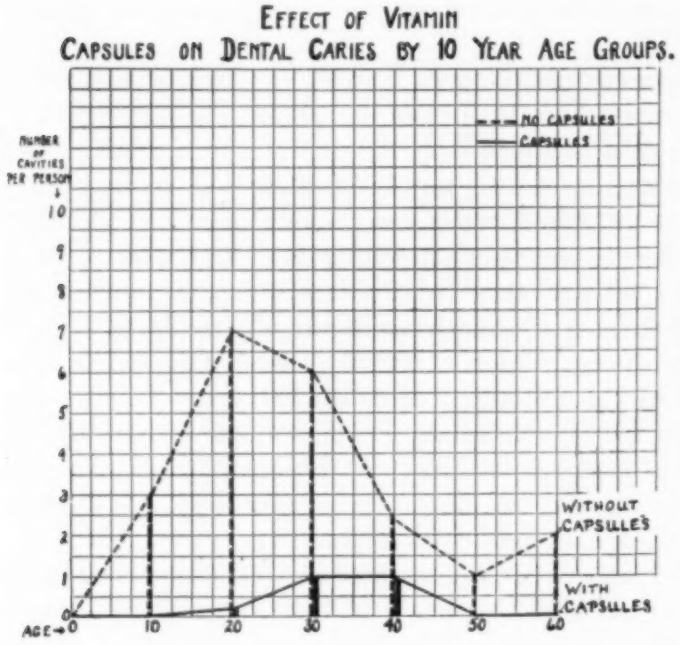


FIGURE V—Progress in control of dental caries, by difference in number of cavities developed per individual in group receiving special activators and those not receiving them.

ceiving additional vitamins there were only 3 cavities found in the 20 individuals. The additional activators were given in capsule form, each capsule containing 0.6 gm. Usually two capsules were taken with each meal. The capsules contained a mixture of the activators as concentrated from an exceptionally high vitamin butter, with about an equal quantity of an exceptionally high vitamin cod liver oil, both of which were selected by means of chemical tests. The improvement in general health, freedom from colds and capacity for work was very marked in all of these age groups receiving the capsules.

Since it is true that normal growth and maintenance of health are dependent upon the availability of the building blocks for growth, function and repair, it is not sufficient that we provide only the energy factors and the minerals, but also the activators with which these factors may be utilized. These apparently must come chiefly from plant sources. If the plant does not find in the soil the essential factors, chiefly mineral, and radiant energy out of which it can build its structures including its activators, it cannot provide for animal life those other building blocks without which animal tissues cannot be built or maintained.

When we study a map showing the locations where heart disease is most severe and on the increase, we find we are dealing in general with those areas that have been longest populated and the soil partly

depleted of such minerals as phosphorus, calcium, magnesium, potassium, etc. This newer view of disease, or the lack of growth and the maintenance of function, seems related primarily to the absence of this newer group of forces, the activators, and we see more clearly why we have the annual pilgrimages to the hospitals, and that many conditions we have thought of as diseases are really symptoms.

SUMMARY

Very little emphasis seems to have been placed upon or importance attached to the fact that annual tides have existed producing rhythmic rise and fall in the levels of vital phenomenons. I have placed much emphasis upon the fact that the very existence of the tides as rise and fall in the levels of life is itself the indisputable evidence that the phenomenons are related directly to factors which are variable from month to month in cycles.

Since the newer knowledge of the rôle of the activators, including vitamins, has shown them to be fundamental contributing and even controlling factors in growth and function; since all animal life is dependent upon plant life for its food supply; since the fat soluble activators are in general the most difficult to obtain; and since milk is the only single food that makes available all the various factors essential for life and growth; it has been used as the chief food product for these studies.

Intensive studies over a period of several years have revealed variations in the level of the fat soluble activators of milk which are traceable directly to the food of the animals providing the milk. The winter rise in morbidity and summer fall in the same seem to have some relation to the sun's position and to the growth of plants through the activity of the chlorophyll, which produces activating substances which are essential for animal life.

The extension of this study to dairy products obtained from many countries distributed throughout the world in both hemispheres demonstrates the presence of this relationship. The application of the principles involved by the administration of the fat soluble activating products that are obtainable from actively growing plant foods, particularly from milk fat produced from such foods, is found to be capable of effecting a very marked amelioration of the pathological phenomenons associated with a reduction of infection through increased resistance as a defensive reaction, and in general is preventing the recurring cycle of morbidity in many individuals.

The accumulating evidence suggests the consideration of disease being, in many cases, more correctly speaking, a symptom and that

individuals often, instead of dying because they contract disease, primarily develop disease because they are dying. This interpretation provides an explanation for the increasing incidence of several diseases in particular localities, and seems to be associated with a depletion in the activating products of plant foods in these districts in part or chiefly the result of soil depletion of essential chemicals for efficient plant development, since these chemical elements are essential to the plant for creating these vitalizing activators which are essential for animal life.

To the extent to which these interpretations are correct, there is need for a change of emphasis in health programs from prophylaxis which has been found to be only partially effective, to an increase in the required activators partly by an improvement of soil conditions in order that plant life may be improved in quality, both for its use as food for humans and for the improvement of the nutrition of the foster mothers —the dairy animals—around which our civilizations have been built. This I interpret to be the means in the light of the best available knowledge for meeting the challenge of not only the Nordic races in the temperate zones, but for the betterment of human life wherever found; namely, to make available not only the mineral and other chemical elements needed for body building and repair, but also the vitalizing factors or activators, some of which are the known vitamins.

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Physical Findings in New York City Continuation School Boys*

An Element in the Vital Statistics of Adolescents

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THIS is a preliminary and general medical and statistical study of material derived from personal examination of 2,691 working boys, 14 to 17 years of age, examined during 3 years—1926 to 1929—at the West Side Continuation School in the borough of Manhattan, and from selected items from examination of 4,661 boys in the Brooklyn Boys' Continuation School during the year 1929–1930 by the writer and three other physicians under his supervision.

The first group was part of the examinations of boys and girls done in a 3-year experiment in which three agencies coöperated: the New York City Department of Health through the Division of Industrial Hygiene, Dr. E. S. Morton, chief; the New York City Department of Education through the Director of Continuation Schools, Mr. Siegel, and Charles Degen who was in active educational charge; and the Public Educational Association through Mrs. Kinney, together with the Academy of Medicine through Dr. Corwin and with a number of advisory medical committees. The Brooklyn work is being done under the same agencies of the Health and Education Departments and the Kings County Medical Society, the participation of which medical organization is a novel and highly important excursion in public health work.

In this paper it is desired to give not only the results of the examination, but to discuss the possibilities of standards of history taking, of methods of physical examination, and of diagnosis; to point out the medical peculiarities of this group; and to add to our general knowledge of the diseases and vital statistics of these 14 to 17 year old boys as far as it has been possible to analyze and correlate the findings at present. No extensive or full data exist in medical books or literature on this group; as the work has progressed, more than one

* Read before the Vital Statistics Section of the American Public Health Association at the Fifty-ninth Annual Meeting at Fort Worth, Tex., October 27, 1930.

condition of interest has appeared and has led to the belief that a certain medical hiatus might begin to be filled. Infancy and childhood have been widely and exhaustively combed and studied, but the adolescent age of 14 to 17 is more or less of a medical *terra incognita*.

The boys were either workers or prospective workers. A thorough history taken by a nurse is followed by a thorough physical examination by the doctor. The history (Table I*) covers family, home conditions, recreations, habits, subjective symptoms, previous diseases, vaccination, industrial diseases, diphtheria immunization, accidents, and operations. The physical examination (Table II*) covers all the systems and special organs and aims to yield as careful and expert a search for physical defects as can be given in any private physician's office. It will be understood that X-ray and laboratory tests are not done but are recommended in every case where they are considered necessary for diagnosis or treatment.

The doctor lists the defects on the chart, also making a list for the pupil to take home for the parents or doctor and for the teacher's records. To the pupil is explained the results of his examination, the meaning of each defect for the present and its import for the future, and directions are given for remedying the same by simple hygienic measures, by reference to his private physician or, if a physician cannot be paid, to a clinic. This medical advice is supplemented by classroom instruction in a series of lessons developed by Mr. Degen on personal and applied hygiene based on the defects revealed by medical findings. All efforts are made to obtain the written opinion of the private physician and to record all reports from clinics.

The boy is called the following week when he is again examined and questioned as to what he has done, and is called weekly until normal. Records of these follow-ups are placed on the chart in code showing weight, improvement, cure, etc., and full notes are kept as to visits to physicians or clinic. If no coöperation is attained in the serious cases, a home visit is made either by the teacher or social worker. At the end of 6 months a reëxamination entailing another complete history and physical examination is made for each boy whether originally normal or not.

In addition to the above method used in Manhattan, very important pioneer aid has been rendered in Brooklyn by the Kings County Medical Society through its secretary, Dr. Alec Thomson. To this organization is sent by the examining doctor the name and address of the boy, also of his private physician together with a list of defects found in any case that is considered serious. The medical society then com-

* Available upon request to Dr. Meyers.

municates such information in writing to the physician, asking him to communicate with the boy and arrange for medical supervision of the case. I believe the many sincere responses received from private physicians have demonstrated the great benefits to the boys and the helpful and hopeful basis for coöperation between private and public medicine.

A tabulation of the physical defects found in the original examinations of 2,691 boys (Table III*) was compiled by the statistical department of the Metropolitan Life Insurance Co.† There were 6,522 defects or 2.4 per boy compared with 1,423 in 728 boys examined by me in Brooklyn, or 2 per boy. Twenty-three hundred and thirty-six, or 86.5 per cent, showed one or more defects. There were 13.2 per cent normal, compared with 12.8 per cent in 728 and 10.5 per cent in 2,940 examined by four physicians in Brooklyn.

The most common defects in order of frequency were:

Unclean teeth	Flat-feet	Round shoulders
Underweight	Delayed adolescence	Habitus asthenicus
Dental caries	Palpable tonsillar glands without tonsillectomy	Adenoids
Cervical adenitis	Chronic pharyngitis	Chronic otitis media
Uncorrected visual defects	Suspected old tuberculosis	Defective hearing
Pyorrhea	Acne	Rickets
Excessive cigarettes	Impacted wax	Chronic heart disease
Flat chest	Coated tongue	Constipation
Visual defects corrected but glasses not worn	Anemia	Scoliosis
Poor muscular development	Lack of bathing	Diseased tonsils
Nasal obstruction	Bad breath	Enlarged liver

Considering unclean teeth a defect, they showed the largest number, 1,593 or in 59.2 per cent of the boys. Normal except for unclean teeth were 332, or 12.8 per cent in 728, and 10.8 per cent in 2,940 boys examined by four physicians. If we do not consider unclean teeth a bar to a normal physical condition, we can list 25.5 per cent normal in Manhattan against 25.6 per cent in 728 boys, and 21.4 per cent of 2,940 reported by four physicians in Brooklyn.

Underweight, based on more than 10 per cent under the averages of the Baldwin-Wood Scale, gave 527 or 19.6 per cent, compared with 8.4 per cent in 728 boys, and 8.2 per cent in 2,063, by two doctors in Brooklyn. Overweight, based on more than 10 per cent above averages, showed 48 or 1.8 per cent, compared with 9.5 per cent in 728; 14 other cases or 0.5 per cent were listed as obesity compared with 15 or 2 per cent in 728. Malnutrition gave 85 or 3.2 per cent compared with 1 or 0.1 per cent in 728.

Organic heart disease listed 31 or 1.2 per cent, against 3.3 per cent

* Available upon request to Dr. Meyers.

† Thanks are hereby expressed to Dr. Dublin, Statistician of the company, in giving the facilities of his department for the tabulation and to Edwin W. Kopf, Assistant Statistician in active charge, for his constant friendly encouragement and valuable suggestions.

in 728, 1.5 per cent in 1,335, 2.7 per cent in 440, and 3.2 per cent in 437, or 2.5 per cent in 2,940 in Brooklyn. Cardiac anomalies (various murmurs in conditions not regarded as indicatory of organic heart disease), 11 or 0.4 per cent, against 2.2 per cent of four physicians.

In 89 or 3.3 per cent, there was cause for suspicion of old healed tuberculosis of the lungs, while in 728 cases 9 or 1.1 per cent were found. Habitus asthenicus was present in 38 or 1.5 per cent against 0.7 per cent in 728. Two cases of active tuberculosis were listed against none in 3,410 boys among three doctors in Brooklyn. In 19 or 0.7 per cent, a family history of tuberculosis was elicited. In three cases a cervical adenitis was considered tuberculous in origin. In 14 or 0.5 per cent old plastic pleurisy existed; in 7 cases chronic bronchitis, and in 2 asthma. Pyorrhea gave 171 or 6.4 per cent against 3.5 per cent in 728. Enlarged tonsils were 121 or 4.5 per cent, compared with 1.8 per cent in 728 and 4.8 per cent in 4,661 by four doctors; diseased tonsils 23 or 0.9 per cent against 2.1 per cent of 728 and 2.6 per cent of 4,661 boys by four doctors.

There were 259 or 9.2 per cent with distinctly palpable, large cervical glands against 3.6 per cent in 728, and 100 or 3.7 per cent of hard or enlarged tonsillar glands or nodes without tonsillectomy, against 4.5 per cent in 728. Only two such cases were found after tonsillectomy against 4 in 728.

Anemia gave 61 or 2.3 per cent compared with 17 or 2.5 per cent in 728. Constipation showed 26 or 0.9 per cent against 21 or 2.9 per cent in 728 and 68 or 2.4 per cent of 2,940 boys among four physicians.

There were 23 or 0.9 per cent of enlarged liver, of which 3 were associated with catarrhal jaundice, 6 with coated tongue, and 14 with constipation. This compares with 20 or 2.7 per cent in 728 cases, of which 11 were associated with constipation, 8 with coated tongue and 1 primary. There were 90 boys or 3.4 per cent with coated tongues, of which 6 showed enlarged liver, only 1 constipation, 1 chronic gastritis, and 3 bad breath.

There were 75 cases of acne or 2.8 per cent, 3 of psoriasis, 13, scabies; 21, warts; 29, chronic eczema; 3, tinea versicolor; 9, herpes; 1, pityriasis rosea; 6, trichophytosis; and 3, ichthyosis. There were 41 or 1.5 per cent of round shoulders, 12 or 0.4 per cent of moderate kyphosis, none of which was apparently of tuberculous origin, 27 or 1 per cent of scoliosis, 145 or 5.4 per cent of poorly developed musculature, and 158 or 5.9 per cent of flat or undeveloped chest. Poor musculature and flat chest might exist in the same boy as many exhibited 2, 3, 4, and even 7, 8 or more defects. Flat feet showed in 106 or 3.9 per cent.

Excessive cigarette smoking was found in 165 or 6.1 per cent, and in Brooklyn in 3,410 boys by three doctors in 9.7 per cent. The total number of smokers among the 3,410 boys was 1,049 or 30.9 per cent, and of these 32 per cent or nearly one-third were considered excessive users. As to eyes, 196 or 7.3 per cent had uncorrected defective vision, 130 or 5 per cent corrected vision, 146 or 5.4 per cent had obtained glasses but were not using them. As to ears, there were 7 cases of acute otitis media, 35 or 1.2 per cent of the chronic form, 3 of acute mastoiditis, 78 or 29 per cent of impacted wax, and 34 or 1.2 per cent of defective hearing. There were 39 or 1.3 per cent of probable adenoids.

Listed are 13 or 0.5 per cent of inguinal hernia, 11 of undescended testicles, 7 of varicocele, 5 of hydrocele of the cord, 2 of acute gonorrhea, 2 of hermaphroditism. In the nervous and endocrine systems, 11 cases of very "nervous" or neurasthenic type, 21 with residual evidence of old paralysis due to poliomyelitis, birth-palsies, or encephalitis lethargica, 4 of hyperthyroidism, 9 of gonadal dysfunction, 5 of pituitary, 103 or 3.8 per cent with delayed adolescence (small genitalia, little or no pubic hair), against 1.1 per cent in 728 in Brooklyn, 5 of simple goiter, and 13 of feminism.

The following items are of interest:

Canities	4		Epilepsy	2	
Exophthalmos	1		Chorea	2	
Blindness in 1 eye	5		Hydrocephalus	1	
Cauliflower ear	1		Microcephalus	1	
Frontal sinusitis	1		Excessive exercise	2	
Maxillary sinusitis	1		Lack of exercise	16	(0.6%)
Hutchinson's teeth	8	(0.3%)	Fatigue	1	
Rickets	31	(1.2%)	Bad breath	48	(1.8%)
Lobar pneumonia	1		Insufficient sleep	5	
Unresolved pneumonia	1		Hereditary lues	4	
Emphysema	1		Wassermann test advised	25	(1%)
Congelation, dry-ice	1		Urinalysis advised	24	(1%)
Enteroptosis	5		Diabetes mellitus	1	
Gastroptosis	2		Excessive tea or coffee	9	(0.3%)
Chronic appendicitis	3		Stuttering or stammering	23	(0.9%)
Acute appendicitis	1		Possible benzol poisoning	2	
Rectal abscess	1		Lack of animal protein in diet	3	
Pyloric obstruction	1		Lack of vegetables	1	
Traumatic cholecystitis	1		Hemophilia	1	
Basal metabolism test advised	3		Dirt-eater	1	

As stated, each boy underwent a second complete examination at the end of 6 months. Table IV,* prepared by the statistical department of the Metropolitan Life Insurance Company, shows the results in 485 of 2,691 boys so examined as to total and individual defects remedied or improved. Of 1,223 defects found at first, 583 or 47.7

* Available upon request to Dr. Meyers.

per cent were cured, or bettered. On first examination there were 2.5 defects per boy; on the second 1.2. It will be understood that in the interval the boys were seen weekly many times for follow-up examinations and medical advice and that many had been to physicians or clinics or followed hygienic advice.

For underweight, 35 or 31.5 per cent of the original 111 became normal; these had been advised as to diet and exercise or had consulted physicians for tonics, but it must be remembered that some of these boys may in the natural course of development gain requisite weight. In malnutrition, 8 or 32 per cent of 25 became normal; defective vision, 19 or 52.8 per cent of 36; defective tonsils, 16 or 57.1 per cent of 28; carious teeth, 27 or 61.4 per cent of 44; unclean teeth, 104 or 35.1 per cent of 296; pyorrhea, 20 or 58.8 per cent of 34; organic heart disease, 2 or 22.2 per cent of 9; acne, 7 or 58.3 per cent of 12; cervical adenitis, 19 or 48.7 per cent of 39; anemia, 8 or 47.1 per cent of 17; poor personal hygiene, 7 or 77.8 per cent of 9; excessive cigarettes, 8 or 44.4 per cent of 18; and 236 or 61.9 per cent of 381 other miscellaneous defects. These are excellent results and corroborate the impression of real interest in most of the boys in their condition, their coöperation with the examining doctor, the aid of the private physician, the sincere effort of the examining physicians, and the general excellence of the interrelated activities of the educational, social and medical agencies in the experiment.

In the original 2,691 examinations there were found 6,522 defects divided into 234 separate medical or surgical conditions. From the clinical aspects all these findings are of importance for present health and prevention of future diseases; but the group does not evidence many acute threatening conditions. This adolescent group, just as it shows a marked tendency to growth, displays a distinct resistance to disease. Analysis of the findings in this light and a consideration of other and comparative statistics will be of interest.

For 1919–1920 the death-rates[1] per 1,000 white males living at ages considered, U. S. Registration Area, were: under 1 year, 84.33; at 1, 17.59; at 2, 8.45; at 7, 3.01; at 12, 2.20; at 17, 3.93; at 22, 4.94; at 27, 5.97; at 32, 6.89. For New York City as a whole they were: under 1 year, 89.45; at 1, 23.07; at 2, 9.46; at 7, 3.65; at 12, 2.24; at 17, 3.83; at 22, 5.49; at 27, 6.21; at 32, 7.41. From under 1 year then there is a fall to 12; at 17 the rate has begun to rise and continues to rise until at 77 years with 111.20 per 1,000 it is far above infancy rates. In 1920, 8.6 per cent of the total male population of the United States was in the group 15–19. For the intercensal periods from 1880 to 1920 this group has increased 31.2, 15.4, 20.7, and 3.2 per cent.

Table V * prepared for me by the Bureau of Records of the Health Department, shows the causes of death in the Borough of Manhattan for 1929, ages 14, 15, 16 inclusive for males and females. Deaths numbered 62 at 14 years, 67 at 15, and 81 at 16. Among the causes were typhoid, 1; scarlet fever, 1; diphtheria, 2; influenza, 4; epidemic cerebrospinal meningitis, 10; tuberculosis, 45, of which 35 were of the respiratory system; cancer, 5, of which the stomach, lung and pancreas were each 1 and the bones 2; benign tumors, 6; acute and chronic articular rheumatism, 10; anemia, 1; leukemia, 1; ear and mastoid, 9; heart disease, 19, of which 16 were of chronic endocarditis; appendicitis, 6; hereditary syphilis, 1; chronic nephritis, 4; bronchopneumonia, 3; lobar pneumonia, 12; suicide, 1; homicide, 6; accidents, 32. In the 4 cases of influenza, 3 gave pneumonia and 1 heart disease as contributory to death.

The principal causes of death are then tuberculosis, accidents and heart disease with lobar pneumonia, rheumatism, epidemic cerebrospinal meningitis, mastoiditis and appendicitis following. For the boys, accidents head the list with 23, then tuberculosis, 18; lobar pneumonia, 8; heart disease, 6; epidemic cerebrospinal meningitis, 6; cancer, 5. The male and female population at these ages for 1920 in Manhattan are about equal. The deaths show for respiratory tuberculosis, 23 females to 12 males; chronic endocarditis, 10 females to 6 males; lobar pneumonia, 8 males to 4 females; accidents, 23 males to 9 females; cancer, 5 males to no females. The mortality rate in our age group is then low, and the morbidity causes outside of tuberculosis and heart disease, which are known to be low, not alarming.

GROWTH AND DISEASES IN AGE GROUPS

Minot,[2] in his classical work on age, growth and death, gives the yearly percentage increments in weights for boys from the end of 9 to the end of 10 as 11.6 per cent; 10–11, 6.5 per cent; 11–12, 7.1 per cent; 12–13, 7.9 per cent; 13–14, 11 per cent; 14–15, 11.7 per cent; 15–16, 15.7 per cent; 16–17, 10 per cent; 17–18, 4.9 per cent; 18–19, 1.9 per cent. Just in our age group the body has a recrudescence of growth. In girls this development occurs 2 years earlier. Sydenstricker,[3] in his Hagerstown morbidity studies, notes that each period of life is characterized by its own distribution of illnesses, that in childhood respiratory, communicable, skin, ear, eye, tooth, nervous and digestive conditions and diseases cause most illnesses; that in old age heart, kidney and nervous conditions cause most illnesses; but in adolescence and

* Available upon request to Dr. Meyers.

young adult ages illnesses from all these causes are at their lowest levels. As the work on our age group of boys has progressed, impressions as to incidence of disease in general and the occurrence or lack of occurrence of certain conditions have become stronger. It will be interesting to analyze our findings and to compare them with existing statistics.

Gonorrhea—In the Manhattan study of 2,691 boys only 2 cases, or 0.3 per cent, of gonorrhea were found, both acute. In the Brooklyn group, among 728, no cases, and in 4,661 of four physicians, 5 cases or 0.1 per cent. It is possible that some chronic cases escaped detection, but as the boys were stripped for this examination, it is unlikely that many acute cases were missed. This lack of gonorrhea is rather striking. Brunet and Edwards,[4] in a survey of Detroit physicians, hospitals, and clinics, for May 15, 1926, report 8,070 cases of gonorrhea under observation. Of these, boys under 16 showed 1.1 per cent for acute cases and 0.9 per cent for chronic. Females under 16 showed much greater numbers. Deacon,[5] in his Michigan study of 29,741 cases of gonorrhea, reports a low incidence to about 15 when a rapid rise to a top in the group 20–24 occurs. This holds also for gonorrhea and syphilis combined. Among girls, the rates are continuously higher until 22. Out of 21,677 gonorrheas in white males, 49 were 10–14, 2,264, 15–19, and 8,190, 20–24. Somewhere between 10–14 and 15–19 there is a marked increase from 0.2 per cent to 10 per cent, but we found no such high incidence in our 14–17 groups, but figures comparable to Deacon's 10–14 group.

Syphilis—No case of the acquired form was found in Manhattan. In Brooklyn, 2 cases were so diagnosed in 4,661 by four doctors; the 2 by one doctor in 1,347 boys. In Manhattan 8 cases of Hutchinson's teeth occurred and in 25, or 1 per cent, a Wassermann was advised on suspicion of hereditary lues. In 728 boys in Brooklyn, 3 were listed as hereditary lues and 6 or 0.9 per cent were advised to have a Wassermann. In the Deacon[5] study of 15,486 male syphilitics, 117 were 10–14; 496, 15–19; 2,548, 20–24. How many in the earlier ages are hereditary is not stated. Brunet and Edwards[4] in the Detroit study for the male acute syphilis cases (infection 1 year or less) report 6.2 per cent occurring under 16 years. We may have failed to discover all cases, but out of 7,352 boys in the 2 schools there were found only 7 cases or 0.09 per cent of gonorrhea and 2 or 0.03 per cent of acquired syphilis. We are then dealing with a group showing little venereal infection, a finding of importance in statistical and diagnostic knowledge for the examiner and of possible preventive and social value to the boy.

Abdominal Conditions—Only 26 or 0.9 per cent of constipation were found. As in early infancy and childhood and in adult life constipation is regarded by physicians and laity as quite common, this adolescent group would seem quite free. In Brooklyn, 21 or 2.9 per cent of 728 and 68 or 2.4 per cent of 2,940 among four doctors were found. Most of the cases were not severe or persistent; an occasional constipation for 2 or 3 days. In Brooklyn, special attention was directed to the number of daily bowel movements; most reported 1, or 1 and 2, and many, 1, 2 and 3 daily. Sydenstricker[8] found no cases of constipation in his 5–9, 10–14, 15–24 age groups, and gives annual rates per 1,000 for all ages of 8.5 per cent, for ages 0–4, 11.3 per cent; 25–44, 12.9 per cent; 45–64, 11.6 per cent; 65 and over, 37 per cent. These findings as with his others are not strictly comparable to those findings of our group as he would find such conditions only when reported as a major cause of illness, as he says, while our survey is based on intensive general history taking and examination. Our adolescent group shows a healthy and active intestinal system and should offer a field for dietary and physical instruction in the avoidance of future constipation. In 14 of the 26 cases an enlarged liver was found; possibly these 14 represent the more persistent and severe cases.

In Brooklyn, 11 of 21 gave enlarged liver. Of 90 boys or 3.3 per cent with distinctly coated tongues, only 1 was associated with constipation, 6 with enlarged livers, 3 with bad breath and 1 with gastritis. In Brooklyn, 31 or 4.3 per cent of 728 showed coated tongues; of these 11 or 35.5 per cent were associated with enlarged liver, 1 with gastritis and none with constipation. It would seem in this group that coated tongues are not particularly associated with constipation, bad breath or gastritis, but more with enlarged liver. Bad or unpleasant breath in 48, or 1.8 per cent, was also not frequent in constipation. Negro boys often showed a markedly furred tongue for no apparent reason and Italians frequently had bad breath, due possibly to peculiarities in diet.

Attention is called to the infrequency of acute appendicitis, 1 case, and of chronic appendicitis, 3 cases. There may be a causal or dependant relation of appendicitis to the infrequency of constipation. Very recently the Metropolitan Life Insurance Company[9] has reported its industrial insurance experience for deaths from appendicitis since 1911. For white males all age groups have shown a distinct increase except 10–14 with a decrease of 2.6 per cent, and 15–19 with a decrease of 2.8 per cent, against an increase of 20 per cent for all ages. For white females, only the 10–14, 15–19 and 20–24 groups show decreases. We again note distinct peculiarities in our adolescent group.

We note also that the group shows little or no diarrheal or irritative gastric or intestinal conditions. There seemed in the 2,691 boys and in the 728 in Brooklyn a very general knowledge and practice of a mixed balanced diet. Only 1 boy in Manhattan reported that he ate no vegetables; 3 reported abstinence from animal protein; only 1 was a faddist on raw vegetables. To what extent diet may be related in our group to the low incidence of constipation, appendicitis and other intestinal and gastric conditions or the active working life and the general vitality and resistance of these years is an interesting question.

Tuberculosis—Only 2 active cases were found and none in 2,490 among three doctors in Brooklyn. In Manhattan 89 or 3.3 per cent were listed as possible old healed pulmonary cases. The finding was based on dullness over one or both apices or other areas, abnormal breathing, limited apical projection fields or difference in width of the apices, or lack of expansion of the inferior limits associated with dull or limited apex. No attempt was made to differentiate between childhood and adult types of infection. Findings of 38 or 1.5 per cent of habitus asthenicus or phthisicus were listed, 19 or 0.7 per cent with ascertainable family history, 3 with a cervical adenitis with a childhood history of neck gland operation, 14 or 0.5 per cent of chronic plastic pleurisy, 7 or 0.3 per cent of chronic bronchitis, 2 of asthma, 1 of rectal abscess and 1 of tuberculosis of the eye. In this category our group is again comparatively free. Drolet[8] gives the general tuberculosis rate per 100,000 for New York City for males living in each age group for 1928 as: 0–4 years, 53; 5–9, 12; 10–14, 13; 15–19, 66; 20–24, 110; 25–29, 114; 40–44, 180; and 60–64, 256. Chadwick[9] in Massachusetts in the last two years found among 51,000 school children below high school age that 1.5 per cent showed the childhood type and 3.4 per cent were suspicious. Only 1 in 3,200 examined was of adult type. Based on Chadwick's findings, Bolduan[10] estimates for New York City that nearly 20,000 school children should show the childhood type. In females, Drolet gives the peak for 1928 in the group 20–25 instead of being as formerly in 30–35 and concludes:

> In a given 1,000 tuberculous deaths in New York City at the present time the age concentration among females is at 20–25 years; among males, 40–45; among negro males at 25–30, and white males 40–45; among both negro and white females at 20–25; among Jewish males, after 45.

Heart—Twenty-nine or 1.1 per cent were listed as organic heart disease. In addition, there were 2 diagnosed as athletic heart; they showed cardiac enlargement with a systolic apical murmur and a his-

tory of strenuous athletics. In 3 others, simple cardiac enlargement was noted; urinalysis was advised. In 13 or 0.5 per cent there was circulatory asthenia, in 24 or 0.9 per cent functional arrhythmia associated in 1 case with organic heart disease; in 46 or 1.7 per cent a tachycardia with pulse of 96 or more, most of which cases gave the impression of excitement due to the examination; in 2 a marked bradycardia of 42 and 48. A pulse of 60 in the boys was not infrequent. In 11 or 0.4 per cent there were murmurs, apical, basal aortic or pulmonic or combinations, with no enlargement, that were classed as cardiac anomalies, including open ductus arteriosus, patent foramen ovale, ill-defined pulmonic valve or artery conditions, but not respiratory murmurs. It was felt that such a grouping should be made as in these cases they should be told the murmur does not mean organic heart disease as might be erroneously diagnosed with a resultant impairment of his physical and industrial activity, and his peace of mind.

In the group of organic disease, many knew of no cardiac condition, none was seriously incapacitated, a few had moderate dyspnea on exertion, but all would be placed in Class I of the American Heart Association classification.

In Brooklyn of 728 boys I found 3.3 per cent of organic heart disease, one physician 1.5 per cent in 1,335; one, 2 per cent in 440; and one, 3.2 per cent in 437—an average of 2.5 per cent in 2,940. There were frequent consultations between the two morning and the two afternoon doctors in any questionable case. Of cardiac anomalies I found 2.7 per cent; the other three physicians, 1.5 per cent; two, 3.2 per cent or 2.2 per cent for 2,940 boys. In all, 136 boys were found with murmurs, but of these 64 or 45 per cent were not regarded as of chronic valvular disease. Of the 728, a history of previous treatment for heart disease was given in 2, but examination showed nothing. In 2 cases diagnosed organic disease, on weekly follow-ups, the murmurs disappeared. Whether this is a return to normal or the hearts might again give murmurs is interesting. One case of dextrocardia was discovered in 2,940. Further analysis of this group in relation to etiology, smoking and exertion should be valuable.

Each organic case was told of his present condition and careful instructions given against cardiac strain. How important this may be for his future can be seen in the great rise in cardiac deaths at 35–44 and later. In economic groups similar to ours the Metropolitan Life Insurance Company[11] reports death rates, per 100,000 white males, from heart disease (pericarditis, acute endocarditis and myocarditis, angina pectoris, other diseases of the heart) in its industrial department for 1929, 1 year and over, 155.8; 1–4, 7.8; 10–14, 17.6; 15–19,

26.9; 20–24, 31.7; 25–34, 46.8; 35–44, 134.4. Cahan[12] in a recent Philadelphia study of 1,821 high school boys up to 17 years reports 1 per cent of organic heart disease. Among school children[13] in different cities in this country the incidence of organic disease reported has varied from 0.63 per cent to 1.7 per cent. In elementary school children in England and Wales 0.7 per cent was found. In the Hagerstown survey Sydenstricker[3] gives the illness rate for diseases of the circulatory system as 9.6 per 1,000 for age 0–4; 7.6, 5–9; 15.8, 10–14; 8.3, 15–24; 12.9, 25–44; 31, 45–64.

It should be noted that, unless the chest is bared in all examined in standing, recumbent and left lateral positions or after exercise, all conditions of the heart will not be discovered or properly diagnosed. For this reason, statistics as to the prevalence of organic heart disease among students will vary. All our boys were examined with all clothing removed from chest and with facilities for recumbency. The heart disease death rate[14] per 100,000 population, male and female, for 1924 for age groups 10–14 was 20.5; 15–19, 26.7; 20–24, 26.6. Compared with rates of 1914, the 10–14 shows a reduction of 18 per cent, the 15–19 a rise of 8.5 per cent and the 20–24 a rise of 2.3 per cent. Figures given by the Medical Society of the State of New York[15] from studies by Davenport and Love on heart defects in drafted men show that of each 1,000, 45.07 showed some form of organic heart disease probably due wholly to damage of rheumatic infection, and 30.09 per 1,000 showed valvular defects. It seems apparent that just at the age of our continuation school boys much cardiac diagnostic and prophylactic investigation and advice are in order.

SPECIAL INTERESTING DEFECTS

Among other defects of special interest were flat-foot in 106 or 3.9 per cent, of which 3 cases had had arches made. None complained of any pain or disability. It would seem that in this age and group flat-foot is not a particularly disturbing condition. One hundred and ninety-six or 7.3 per cent had defective vision uncorrected by glasses, another 146 or 5.4 per cent had at some time procured glasses, but were not wearing them through negligence or fear of ridicule, another 130 or 5 per cent were corrected by glasses before our examination; in all, 17.7 per cent needed visual correction. Seven cases of acute otitis media were diagnosed and 3 of subacute and 35 of chronic found. Enlarged tonsils existed in 121 or 4.5 per cent but a diagnosis of diseased tonsils was made in only 23 or 0.9 per cent. Among 728 in Brooklyn, 4.8 per cent gave enlarged tonsils and 2.6 per cent diseased. In 100 or 3.7 per cent there were hard and mostly enlarged tonsillar glands or

nodes on one or both sides without tonsillectomy, and only 2 cases with a history of the operation.

In Brooklyn, in 728, 33 or 4.5 per cent were found with the condition without tonsillectomy and 4 cases after it. Chronic cervical adenitis was found in 259 or 9.2 per cent; in 3 cases persistence of an old tuberculous adenitis diagnosed. In Brooklyn, in 728, 3.6 per cent were found; this difference apparently coinciding with their better general nutritional condition. Of the 11 cases of undescended testicles, 7 of varicocele and 5 of hydrocele of the cord, none complained. Of the 80 cases of posture defect none was sufficiently serious to cause subjective complaint or interfere with any activity. The same applies to the endocrine disturbances and to the anemias. In 16 no exercise was taken, either because the boys' occupation was strenuous or through lack of social sense. In 2 there was over-exercise and in others there arose the question of training and reducing weight for boxing. It is a question if boys at this age and stage of development should over prolonged periods retard gain in weight. Two possible cases of benzol poisoning were followed by blood counts and inspection of work premises, but no basis for poisoning by fumes found.

Of the 1,049 smokers among 3,387 boys in Brooklyn with very few exceptions cigarettes were used, most of them inhaled, a few had smoked since the age of 6 or 7. A few were smoking 30, 40 or 50 cigarettes daily; but most of those classed as excessive smokers used 15 to 20. It should be understood that in cases of underweight, malnutrition, heart disease, poor muscular and chest development, habitus asthenicus, suspicious lung findings or anemia, any use of cigarettes at all was viewed as excessive, while in the robust even 10 or 15 cigarettes were not regarded as excessive. I found only 1 boy who was apparently lying about using cigarettes. The same applies in general to hygiene of the teeth. Some boys had apparently never cleaned their teeth all their lives; 2 boys with the dirtiest teeth worked for dental laboratories. The boy of the most untidy and unclean appearance was employed by a dyer and cleaner. Only 1 case of diabetes mellitus was found.

STANDARDIZATION OF HISTORY TAKING, PHYSICAL EXAMINATION, AND DIAGNOSIS

In such group examinations as these, the questions of standardization of methods of history-taking, of physical examination, of diagnosis and of the reliability of the diagnostic results of the different physicians are very important and most closely related. The nurse must be capable and on the alert to obtain all possible leads on subjective

complaints, previous illnesses, and operations to relieve the doctor of the need of re-questioning the boy if an important defect is found. She should know and realize the implications of deficiencies in diet, duration and amount of smoking, inhaling, number of bowel movements and its possible relation to constipation, possible heart and lung complaints, and should have ready the temperature, pulse and respiration in any suspicious case.

As soon as a number of physicians is involved, individual differences in examination and diagnosis tend to complicate results. In the Brooklyn study which I supervised with a force of three other doctors who had had no previous experience except 1 month's instruction in this work, there were such variations. Giving my findings first, the percentages of normal were 12.8, 9.5, 12.5, 8.0; of normal except unclean teeth, 12.8, 8.7, 12.0, 13.0; organic heart disease, 3.3, 1.5, 2.7, 3.2; heart anomalies; 2.7, 1.5, 2.0, 3.2; possible old pulmonary tuberculosis, 1.1, 0.38, 0, 2.0; habitus asthenicus, 0.7, 3.0, 0.8, 0.6; constipation, 2.9, 1.9, 0.7, 2.0; enlarged tonsils, 2.5, 5.9, 5.0, 5.0; diseased tonsils, 2.1, 3.9, 1.3, 3.0. It is evident that there are some distinct variations here, but it must be remembered that the type of boy varied within the school itself, and for each doctor to get an average sample there should be an equalized distribution from commercial and academic classes. But with training of the physicians in the special problems of this work and in the recognition of the usual findings in such a group reliable data are possible. Such a basis is given in the diagnosis sheets given each doctor. These sheets, covering all the systems shown in Table II,* are based on the West Side study of 2,691 boys with their 234 different diagnoses (Table III*). They do not commit the individual doctor to limit himself in his diagnostic judgment as he may add any diagnosis to the list.

At the end of each week each doctor checks on his diagnosis sheets the number of defects found. Thus the supervising physician can meet his doctors in conference at any interval he desires, and review and discuss their problems and compare the percentages of each. Certain diagnostic errors or weaknesses can be thus corrected, and such conferences have been found most valuable for the general improvement of the medical work and the ability of the individual physician. Also the habit of consultation between the doctors in any questionable case minimizes mistakes. The doctors need high diagnostic training and ability to recognize important defects and to disregard minor findings. A single pimple does not make an acne to be counted a defect.

* Available upon request to Dr. Meyers.

During this summer special work has been done by the doctors in nose, throat and cardiac clinics.

But not only is diagnostic skill needed, but a certain standardization of examination is necessary that findings may be statistically comparable and of any value. Careful note was made of appearance as it has been found that an impression of health might not be corroborated after removal of clothing or *vice versa*. Not infrequently, postural defects or underweight or other defects were found in boys of healthy aspect. Weight and height were taken with the boy stripped to waist and shoes removed. Until the genitalia were examined the boy remained thus, when the rest of the clothing was lowered. For the ears and nose, electric specula were used. The throat was thoroughly explored for enlarged, cryptic, buried or pus tonsils, but no diagnosis of diseased tonsils was made unless chronicity was established or in doubtful cases, unless a history of a related infection or repeated tonsillitis existed, or hard, enlarged tonsillar glands or nodes palpable. The glands of the neck were palpated and a general division of chronic adenitis or hard tonsillar glands made.

Teeth were examined only visually. It is certain that a dentist would have discovered many more dental conditions.

The lungs were thoroughly examined, the apices percussed, their borders outlined and compared, as also the lower posterior borders and their expansion limits related to any apical disturbance. Auscultation was particularly directed to the apices, and the infra-scapular and basal areas. In any case of finding or suspicion, temperature, pulse and respiration were noted, and further X-ray examination by the private physician or clinic instituted.

The heart was examined with the chest bared, and in erect, recumbent, lateral positions or after exercise, as necessary. Each cardiac survey was not considered complete unless it contained statements as to cardiac enlargement, murmurs, their location, character and variability, possible etiological factor, knowledge of cardiac condition, and subjective symptoms. All necessary cases were referred to the private physician or clinic for corroborative or supplementary aid in diagnosis.

The abdomen was examined in any case of constipation, of coated tongue, bad breath, and any infra-diaphragmatic pain. The liver was investigated in constipation, in heart disease, in digestive complaints, coated tongue, and bad breath. Kidneys were palpated in suspicious complaints. The genitalia were routinely examined, hernias, groin and axilla considered.

Every system shown in Table II was examined and the results defi-

nitely noted in code as normal or showing specific findings. Every effort was made to eliminate any tendency to give symptomatic diagnoses. In doubtful cases, a question mark was put after the diagnosis, the boy called for special examination again and the aid of the private physician or clinic asked for a more complete diagnosis. Slipshod diagnosis is unnecessary.

CONCLUSIONS

1. Such surveys of the 14–17-year age group, made by combined health and educational agencies, to be followed by more detailed studies of correlated findings, are interesting and valuable as they fill a gap in medical knowledge between infancy and childhood on the one hand and adult life on the other.

2. The very strong effort to enlist the coöperation of the private physician and clinic in this work, and especially the plan of the Kings County Medical Society's coöperation is an advance in the relation of public and private medicine.

3. This age group of 14–17 presents certain problems of weight, growth, nutrition, low mortality and morbidity, with lack or very low incidence of certain diseases, that are peculiar to itself.

4. Physicians in this work must be conversant with these facts and also specially trained in physical examination and diagnosis as are specialists in pediatrics.

5. Standards of physical examination, diagnosis, and recording of results are necessary, especially when numbers of examiners are involved, to procure comparable results. To this end are necessary: (1) definite training in the scope and method of the physical examination; (2) a thorough understanding of the psychology of the group; (3) a knowledge of its statistics and comparative statistics; (4) a use of the diagnostic sheets; (5) weekly checking of defects on such sheets; (6) conferences with the supervisor to check percentages of defects found and to discuss problems arising; (7) frequent consultations between the doctors during examination of any doubtful diagnosis; (8) reference to private physician or clinic for X-ray or other laboratory measures for additional or corroborative information; (9) special training in clinics, as necessary, to perfect diagnosis; and (10) realization that this work needs expert and patient diagnostic ability and that slipshod diagnosis is unnecessary and wasteful.

6. Our 14–17-year group is in a period of rapid growth in size and weight and shows great resistance to disease; the incidence of most infectious diseases is very low; heart, lung, chronic nervous disorders, gastric and intestinal conditions, and even venereal affections, are all low or largely lacking.

7. In the Manhattan study, 13.2 per cent were normal; 25.5 per cent, if we except unclean teeth as a defect. In the Brooklyn study, 12.8 per cent of 728 were normal; 25.6 per cent, not counting unclean teeth.

8. In Manhattan, on the 6-month complete reëxamination of 485 boys, the original 1,223 defects were found reduced by 583, or 47.7 per cent.

9. Only 2 cases of gonorrhea in 2,691 boys or 0.3 per cent were found in Manhattan, and only 5 or 0.1 per cent in 4,661 by 4 physicians in Brooklyn. No case of acquired syphilis was seen in Manhattan and 2 in 4,661 by four physicians in Brooklyn. Cases may have escaped the examiners, but the incidence of gonorrhea and syphilis must be low.

10. Constipation was found in 26 or 1 per cent in Manhattan, and in 2.9 per

cent in 728 and 2.4 per cent in 2,940 by four doctors in Brooklyn. The condition is relatively uncommon, and when it occurs, not severe, but usually intermittent. In Brooklyn, 97.4 per cent of the boys reported 1, 1–2, or 1–2–3 movements daily. Acute appendicitis was diagnosed only once, chronic, 3 times in Manhattan. This infrequency of appendicitis is interesting in relation to the low incidence of constipation.

11. As regards tuberculosis, there were only 2 active cases in Manhattan and 3 among 3 doctors in 2,490 boys in Brooklyn. In Manhattan, 3.3 per cent were found suspicious of possible old healed pulmonary tuberculosis.

12. As regards the heart, 1.1 per cent showed chronic valvular disease. In Brooklyn, 3.3 per cent of 728; three other physicians, 1.5 per cent, 1.2 per cent, 3.2 per cent or 2.5 per cent in 2,940 by four. In Manhattan, there were 0.4 per cent of cardiac anomalies, in Brooklyn, 2.7 per cent, 1.5 per cent, 2.0 per cent, and 3.2 per cent or 2.2 per cent for four. In Manhattan of 40 cases of murmurs, 27 per cent were not regarded of chronic valvular disease; in Brooklyn, of 136, 45 per cent were not regarded of chronic valvular disease.

13. Of 3,387 boys in Brooklyn, 1,049 or 30.9 per cent smoked and, of these 1,049, 32 per cent smoked to excess. Practically all used cigarettes and most inhaled, a few had smoked from the age of 6 or 7 years, and some were found using 30, 40 or 50 daily.

14. Despite the facts that this 14–17-year group shows comparatively low incidence of gonorrhea, syphilis, constipation, tuberculosis, diabetes, heart disease, cancer, arteriosclerosis, nephritis, and occupational disease, all these usually serious conditions will mount to their acmes during full adult and industrial life; that despite their low incidence, we still can find 6,532 defects of 234 varieties in 2,691 boys, and 7, 8, or more defects in a single boy. It becomes evident therefore that this peculiar period calls for the strict application of the modern principles and practices of preventive medicine and health education. Through a knowledge of such defects and by educational and practical medical measures we may then in these young workers discover seeds already planted for tuberculosis, heart disease and other maladies or uncover a soil waiting and ripe for future seeds, and then, like careful and expert gardeners, destroy the seeds or improve or alter the soil that the later scourges will fail to grow.

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NOTE: The standard form for history taking and physical examination, also complete and comprehensive tables covering all findings and deductions, are available upon request to Dr. Jerome Meyers, 41 W. 83d St., New York, N. Y.

Hydrocyanic Acid Fumigation

HYDROCYANIC acid gas is our nearest approach to the ideal fumigant. Confined in inclosed spaces, quite small amounts destroy all animal life therein; but when liberated in the open air its dissipation is so rapid that it requires very large quantities to produce fatal results in human beings. . . . The gas is very penetrating. . . . It will penetrate into the center of a sack of flour in about 2 hours; and if the concentration is maintained sufficiently high, enough gas will penetrate a sack of flour in 6 hours to kill weevils. Highly porous material is very rapidly penetrated by this gas—a fact of considerable importance to fumigators, since the gas penetrates their clothing almost at once.

Penetration being merely one feature of diffusion, it is not surprising to find that the gas also rapidly passes out of materials it has penetrated. A comparatively short stay in the open air will remove most of the gas from fumigated articles. An hour's airing, for example, renders a mattress safe to sleep on, unless an excessively heavy concentration of gas has been used. Water, however, absorbs hydrocyanic acid and holds it, particularly in cold weather, so that after fumigation, moist articles require longer airing than dry ones. Ordinarily, gas absorbed by collections of water is given off so slowly that it is not dangerous; but occasionally a relatively large amount is taken up on a cold day, and when a warm day follows, the gas is then given off more rapidly. One or two accidents on ships have been attributed to gas absorbed and later released from bilge water under such circumstances. On one occasion the ship passed into the warm waters of the Gulf Stream.

. . . Foods absorb the gas, but not in dangerous quantities from the concentrations generally used in building fumigations. It is well, however, to air fumigated foods for two or three hours before eating them. Foodstuffs fumigated in fumigation chambers with high concentrations of this gas (10 to 20 oz. HCN per 1,000 cu. ft.) should be aired at least 24 hours.

Hydrocyanic acid gas is not injurious to the vast majority of the articles of commerce. In the concentrations used for ship fumigations to kill rats it is not injurious to any known material, including such delicately flavored commodities as tea and tobacco. This is a very important consideration and one of the dominating ones in the establishment of this gas as a fumigant. In heavier concentrations (10 oz. per 1,000 cu. ft.) it is injurious to delicate vegetables, such as lettuce and probably to bananas, interfering with the ripening processes. It probably would kill living foods, such as oysters, although the necessity of fumigating oysters has never arisen. Fumigated eggs usually will not hatch.

. . . Because only small amounts are required, hydrocyanic acid gas is a cheap fumigant, probably the cheapest effective fumigant. For the destruction of rats, only 2 oz. of HCN per 1,000 cu. ft. of space is required. At $1 per lb., this amount costs $.12½.—C. L. Williams, *Pub. Health Rep.*, May 1, 1931.

Mortality from Puerperal Septicemia in the United States*

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IT is well known that in practically all countries the death rates from puerperal septicemia, the largest single cause of maternal mortality, have shown little or no tendency to decline during recent years. This is remarkable in the light of present medical knowledge and of improving obstetrical practice. In a previous study[1] by the author of the course of puerperal septicemia mortality, a trend line was fitted to the data of each of a number of states. Though it was observed that these trend lines did not have the same slope, it was impossible to study the causes of this variability because of lack of data. It is possible, however, to determine whether or not the trend of the mortality from puerperal septicemia has been approximately the same for certain broader divisions of the population, namely, urban white, rural white, urban colored, and rural colored.

This was done by analyzing the data published by the U. S. Bureau of the Census in *Mortality Statistics* and *Birth, Stillbirth and Infant Mortality Statistics* for successive years from 1922 (the year in which the continuous tabulation of stillbirths began) to 1927 inclusive. All the states that were in both the death and the birth registration area for the entire period 1922–1927, were combined into a group or unit for which it was desired to assemble information:

California	Michigan	Oregon
Connecticut	Minnesota	Pennsylvania
Delaware	Mississippi	Rhode Island
Illinois	Montana	Utah
Indiana	Nebraska	Vermont
Kansas	New Hampshire	Virginia
Kentucky	New Jersey	Washington
Maine	New York	Wisconsin
Maryland	North Carolina	Wyoming
Massachusetts	Ohio	

For certain divisions of the total population of this unit the total

* Read before the Vital Statistics Section of the American Public Health Association at the Fifty-ninth Annual Meeting at Fort Worth, Tex., October 30, 1930.

TABLE I

MORTALITY FROM PUERPERAL SEPTICEMIA, COMBINED STATES, WHITE POPULATION

Year	Urban			Rural		
	Total Births	Deaths from Puerperal Septicemia	Deaths per 1,000 Total Births	Total Births	Deaths from Puerperal Septicemia	Deaths per 1,000 Total Births
1922	873,288	2,279	2.61	784,663	1,373	1.75
1923	896,292	2,508	2.80	776,431	1,363	1.76
1924	921,738	2,451	2.66	788,527	1,324	1.68
1925	898,943	2,462	2.74	757,993	1,201	1.58
1926	883,164	2,340	2.65	729,384	1,221	1.67
1927	889,169	2,358	2.65	729,782	1,149	1.57

births (live births and stillbirths) and the corresponding number of deaths from puerperal septicemia were obtained, suitable combinations being made where necessary, from the government publications for each year of the period 1922–1927. With this information, death rates were next calculated. These were expressed as the number of deaths from puerperal septicemia per 1,000 total births, a method discussed and advocated by both Howard[3] and Hemenway.[4] The class "total births" includes, of course, both living births and stillbirths.

The results of this analysis are presented in Tables I and II and Figures I and II. As defined by the U. S. Bureau of the Census, "urban" is descriptive of the population living in cities which had 10,000 inhabitants or more in 1920, and "rural," of the population living in places which had less than 10,000 inhabitants in 1920. It

TABLE II

MORTALITY FROM PUERPERAL SEPTICEMIA, COMBINED STATES, COLORED POPULATION

Year	Urban			Rural		
	Total Births	Deaths from Puerperal Septicemia	Deaths per 1,000 Total Births	Total Births	Deaths from Puerperal Septicemia	Deaths per 1,000 Total Births
1922	46,727	220	4.71	81,332	223	2.74
1923	52,238	267	5.11	81,110	225	2.77
1924	59,270	264	4.45	82,599	254	3.08
1925	59,780	300	5.02	81,479	231	2.84
1926	60,040	277	4.61	81,566	189	2.32
1927	62,177	320	5.15	79,915	225	2.82

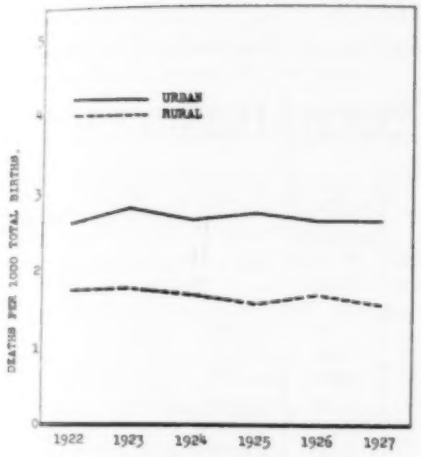

FIG. I. DEATH RATES FROM PUERPERAL SEPTICEMIA, COMBINED STATES, WHITE POPULATION, 1922-1927.

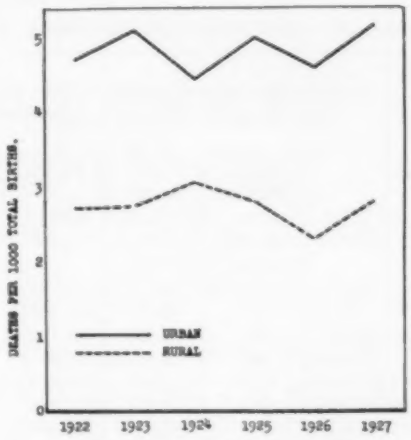

FIG II. DEATH RATES FROM PUERPERAL SEPTICEMIA, COMBINED STATES, COLORED POPULATION, 1922-1927.

will be seen by a study of these tables and figures that there certainly has been no tendency for the rates to decline in the urban white, urban colored, and rural colored divisions of the population. For the rural white division, however, the rates have had a very slight tendency to decline, but in view of the shortness of the period studied this is probably without significance. (The rates for the rural part of the population have been always less than those for the urban part. This is true for both the white and the colored group. The death rates for the colored population have been always higher than those for the white population in both the urban and rural sections.)

Attention will now be directed to another aspect of the problem. Is there any association between the magnitude or trend of the death rates and aggregation of population as judged by the size of city in which people live? In tabulating the data for the urban population of the combined states with the addition of Washington, D. C., to obtain some information upon this point, it seemed preferable to make the classification of cities as to size depend upon the number of total births recorded in 1922 rather than upon the total population in 1920. Accordingly, those places which had a population of 10,000 or more in 1920 were classified into 3 groups: all having fewer than 700 total births in 1922; all having from 700 to 2,000 total births in 1922; and all having 2,000 or more total births in 1922. The results are set forth in Table III. It will be seen that there has been no definite tendency for the death rates for any of these 3 sub-divisions of the combined urban population to decline. (The rates, however, tend to be lowest in the group of large cities.)

TABLE III

MORTALITY FROM PUERPERAL SEPTICEMIA, COMBINED STATES, TOTAL URBAN POPULATION

Year	Cities Having Fewer than 700 Total Births in 1922			Cities Having from 700 to 2,000 Total Births in 1922			Cities Having 2,000 Total Births or More in 1922		
	Total Births	Deaths from Puerperal Septicemia	Deaths per 1,000 Total Births	Total Births	Deaths from Puerperal Septicemia	Deaths per 1,000 Total Births	Total Births	Deaths from Puerperal Septicemia	Deaths per 1,000 Total Births
1922	157,356	458	2.91	156,811	477	3.04	615,414	1,594	2.59
1923	163,505	493	3.02	165,274	569	3.44	629,225	1,751	2.78
1924	169,599	445	2.62	173,291	570	3.29	647,851	1,753	2.71
1925	165,631	510	3.08	169,245	566	3.34	633,398	1,723	2.72
1926	163,258	495	3.03	166,276	503	3.03	623,033	1,647	2.64
1927	165,050	497	3.01	168,299	489	2.91	627,488	1,726	2.75

These findings may be summarized by the statement that, for the period studied, with the possible exception of the rural white division, the death rates from puerperal septicemia have not declined in any of the divisions of the population considered, and furthermore that the rates for each division have remained remarkably constant.

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Septic Sore Throat

AN explosive outbreak of septic sore throat involving over 450 cases, with 4 deaths, is reported. The epidemiological evidence establishes that the source was infected milk from one dairy.

The attack rates in households exposed vary from 38 per cent in the 10–14 year old groups, to over 60 per cent in the group of 20–30 years. The vast majority of infected families showed multiple cases. Suggestive but inconclusive evidence is given that the cow was infected by human carriers of the causative agent of scarlet fever.

The epidemic was controlled by stopping the sale of unpasteurized milk.—McKay, A. L., and Hardman, R. P., A Septic Sore Throat Epidemic, *Canad. Pub. Health J.*, May, 1931.

Immunization of Dogs against Rabies by the One-Injection Method*

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VACCINATION as a prophylactic against rabies in dogs, developed by the Japanese investigators, Umeno and Doi,[1] has had extensive use in the United States following its introduction into the country by Eichhorn and Lyon, in 1922.[2] Some idea of this can be gathered from the fact that, from 1923 to July 1, 1930, approximately 2,000,000 doses of this type of vaccine have been prepared by commercial houses operating under Federal Veterinary License.

The original vaccine of Umeno and Doi was a fixed virus attenuated by phenol and contained 20 per cent of brain tissue. As this contained living virus and was found capable of producing the disease,[3] a feature highly objectionable in a prophylactic vaccine, its use was discontinued and its place taken in recent years by those killed by chemicals or rendered avirulent to such an extent as to be incapable of producing the disease when injected subdurally into rabbits.

There has been considerable discussion as to the merits of the one-dose vaccine and a variety of opinions have been expressed. The points to be considered in evaluating the vaccine are: (1) Does it immunize? (2) Is it safe? (3) How long does immunity last?

Does it immunize? The vaccines considered are those in use in the United States at present. There are two commercial types, one phenol treated, and the other chloroform treated, both of which are either killed, or are avirulent to such an extent that they cannot produce the disease under the most severe test—subdural injection into rabbits. It is held by some that a dead virus has no immunizing properties and that a vaccine consisting of a dead virus is impotent. Animal inoculation is the only test for viability now available and until new methods are at hand a differentiation cannot be made between a virus that is destroyed and one that has been rendered completely avirulent, but is still living.

The phenol-treated vaccines contain from 10 to 20 per cent of brain

* Read before the Laboratory Section of the American Public Health Association at the Fifty-ninth Annual Meeting at Fort Worth, Tex., October 29, 1930.

tissue, while the chloroform-treated contain 33⅓ per cent brain material.

Experimental tests in 1928–1929[4] showed that of 12 dogs treated with the phenol vaccine and later exposed to street virus by intramuscular injection, 5, or about 40 per cent, died of rabies, while of 11 controls, 9, or about 80 per cent, contracted rabies—a decided difference in favor of the vaccinated dogs. It was also noted that deaths of the vaccinated dogs occurred among those treated with particular lots of vaccine. In other words, while the number of cases was small there appeared to be a difference in potency in lots of vaccine prepared in the same manner. It would seem that phenol vaccines in general are capable of producing a reasonable degree of immunity in dogs, but that failures are to be expected at times.

Of practical importance in the field use of the vaccine is the question of the plurality of types of the virus of rabies. Are there types that are immunologically different? The fixed virus from which vaccines are made in this country is a single strain, found on inquiry some years ago to have had its origin in the Pasteur Institute of Paris, France. Do types of street virus exist against which the vaccines made from the standard fixed virus cannot immunize? It is accepted that there is a marked variation in the virulence of different strains of rabies virus, and while the unity of rabies virus is generally held, suggestive evidence has been presented at times to indicate the possibility of the existence of more than one type.[5] The writer encountered a strain several years ago against which apparently little immunity in dogs could be produced. This has been studied in the laboratory and possesses a marked characteristic not seen with other strains of street virus —the amazingly great number of Negri bodies regularly found in smear preparations from the hippocampus. This characteristic has been preserved over a period of years and after a large number of passages in the rabbit. Further immunity studies with this strain are contemplated.

Failures of the vaccine in the field have been noted. These can be explained on the basis of the failure of the vaccine to induce an immunity or to exposure of the animal to a type of street virus immunologically different from the standard fixed virus. Until proof has been produced experimentally as to the plurality of the rabies virus, this question must remain unsettled.

Experimental work on the potency of chloroform-treated vaccines has been highly encouraging. In 1929[4] we showed that of 9 dogs treated with this type of vaccine, all survived exposure to a street virus injected intramuscularly which was sufficiently virulent to cause rabies

in 11 of 13 control dogs. This product has only recently been placed on the market and no data are available on its efficacy under field conditions. Recent work by Kelser with the chloroform-treated vaccine showed a high degree of potency when tested on rabbits.[8]

Is the vaccine safe? The phenol-killed vaccine, if prepared properly, is incapable of producing rabies, as it must before release be shown not to contain virus capable of producing the disease on subdural injection in rabbits. However, there is a certain element of danger that should be recognized. This is a paralysis somewhat similar to that seen occasionally in man following antirabic treatment. In man it has been noted that paralysis is less apt to occur when vaccines which have been attenuated or killed by phenol are used. It is believed probable from the number of cases reported experimentally[6] that the dog is more susceptible to vaccination paralysis than man, although exact figures are lacking. Most of the cases of paralysis appear from within a few days to several weeks after vaccination and the majority of cases result in complete recovery, although the termination may be fatal. Cases of paralysis have been noted in experimental work and also following the field use of vaccine.

The choloroform-treated vaccine, like the phenol-treated, if prepared properly cannot produce rabies. Experimentally, no cases of paralysis have been observed in 30 dogs vaccinated with this product by the writer. The vaccine has been used on approximately 150 dogs at one of our army posts to date with no unfavorable reactions. Just how this vaccine will act under field conditions remains to be seen.

There is a possibility that vaccination may produce for a short period a temporary negative phase during which a dog may be more susceptible to infection than one not vaccinated. This was suggested by limited experimental work reported in 1928.[7] It would appear to be a safe procedure to keep vaccinated dogs in quarantine for 2 or 3 weeks to observe the effects of vaccination and to keep them from possible exposure until immunity has become established.

How long does immunity last? Experimental data have been presented by several workers which indicate that the original Japanese vaccine induced immunity that persisted from some months to 1 year, and that it was apparent after 1 month. Data in respect to phenol-killed vaccine are quite meager. The writer encountered 1 dog which resisted infection 1 year after vaccination. Immunity should not be considered in any event to last more than 1 year, and in some cases it may endure for a shorter time.

No data on chloroform-treated vaccine are available beyond 4 months.

DISCUSSION

It would appear that phenol-killed vaccines are capable of producing immunity in dogs when given in 1 dose, but also that failures of this type of vaccine are to be expected, and a false sense of security should not obtain because of vaccination.

The possibilities of post-vaccinal paralysis with this type of vaccine should be recognized and no absolute assurance should be given that no harm to the dog will result.

From the data available it appears that the chloroform-treated vaccine is superior to the phenol vaccine in both potency and safety, but final judgment must await its use in the field.

Many favorable results have been reported with the use of vaccination in conjunction with other standard control measures in combating outbreaks of rabies in the field. The reduction of the susceptibility of a dog population to rabies infection is a step forward in the control of the disease, but the rigid enforcement of such standard measures as the destruction of stray dogs and quarantine is absolutely necessary for the solving of the rabies problem.

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Comfort in Temperature and Humidity

THE record shows that in the experiments as a whole from 91 to 97 per cent of the group found 70° F. comfortable, irrespective of the humidity. . . . While the optimum humidity seemed to be 55 to 60 per cent, it may be concluded that in an auditorium kept at the standard temperature of 70° F. variations in humidity between the limits used, which are those that ordinarily prevail indoors in temperate climates under winter conditions, make but little difference in the sense of comfort and well-being of the occupants. It is doubtful, therefore, whether there is any justification for the installation of expensive equipment for the control of humidity. For such conditions the dry bulb temperature is the important standard to maintain, together with provision for the renewal and adequate movement of the air.—W. H. Howell, *Science*, Apr. 24, 1931, p. 455.

Birth Records of Illegitimates and of Adopted Children*

Part I

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Part II

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SEEMINGLY no better conception of the existing conditions surrounding illegitimacy in this country, and of the more or less progressive legal steps taken by our various states in connection therewith, can be obtained for consideration, than in Dr. Marietta Stevenson's "Analysis and Tabular Summary of State Laws Relating to Illegitimacy in the United States, in effect January 1, 1928, and the Text of Selected Laws," as set forth in 1929 in "Chart Number 16" of the Children's Bureau of the U. S. Department of Labor.

The pithy first paragraph of this article summarizes most effectively the present status of unlawfully born children:

> Birth statistics are incomplete and no one knows exactly how many children are born out of wedlock in the United States each year. It was reported, however, that 55,134 children were born out of wedlock in the states included in the registration area in 1927 (exclusive of California and Massachusetts, for which illegitimacy statistics were not available). The population of the registration area exclusive of these states comprised more than two-thirds of the population of the United States. It is known that the percentage of illegitimate births is much higher in some states than in others, higher in the city than in the country, and higher for the negro than for the white race. Many of the mothers are pathetically young and are handicapped oftentimes in other ways. It is estimated that about half the mothers are under 20 years of age, and a large proportion of the remainder under 25. The fathers also are quite often mere boys. Considering the problem of illegitimacy from the standpoint of the child, his mother, his father, and society, the need for humane, comprehensive, and constructive laws for safeguarding the rights and insuring the fulfillment of the obligations of the four parties interested becomes clear.

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* Read before the Vital Statistics Section of the American Public Health Association at the Fifty-ninth Annual Meeting at Fort Worth, Tex., October 30, 1930.

† Deceased.

Dr. Stevenson's treatise is a noteworthy accomplishment. It succinctly lays before us the *legal gains* which have already been made by the states in behalf of this unfortunate class along the lines of rights and obligations of parents, action necessary to establish paternity and legitimation, and child's rights of maintenance and inheritance or succession. It contains, as well, some very timely and inspiring comments which should generate within all the determination to do our utmost to insist on equally rational treatment of the inhumane features of the problem, which, under present custom, continue to exist as hindrances to the well-being of each illegitimate child long after all statistical requirements are satisfied and all legal redress secured.

Doubtless many of us directly concerned with the work of registration of births, under statutes patterned closely in accordance with the so-called "Model Law," experienced a hopeful thrill as we came in contact with Dr. Stevenson's analysis and read these words:

> The old unscientific point of view, evidently inspired by moral indignation, expressed itself in legislation meant to punish and stigmatize the unfortunate child and his mother. *The modern aim is instead to protect and care for the child.* Much of the legislation is in an experimental stage, but certain tendencies are discernible, *the result of a growing feeling that the child born out of wedlock unavoidably suffers enough disadvantages without emphasizing these by legislative discrimination.*

In that paragraph, it seems, is the keynote—the guidon which we should follow, until the sorely needed modern legislative measures suited to the "growing feeling" are enacted, and are accorded liberalized administration.

Registrars, as birth record keepers, from a statistical standpoint, know that the factor of illegitimate births has no inconsiderable bearing on the distortion of their returns with respect to bona fide area of inception. A high percentage of such births are recorded at places other than the "usual abode" of the mother. The very character of these births has a marked tendency to inhibit their being reported at all. Would not legal provision for the recording of foundlings under a plan, similar to that mentioned further on, improve the "Degree of Completeness of Birth Registration"?

So much for the statistical aspects—but what of such cases in relation to their individual rights as members of society?

Turning again to the Stevenson analysis, we read that at a regional conference of the Children's Bureau, in 1920, "The duty of the State to protect the interests of children born out of wedlock was recognized and affirmed," and "the numerous laws defining the relationship of the

illegitimate child to his parents and placing a duty of support upon the father, especially laws passed in the last 15 years, are indications of a changing social attitude." So far, so good—the legal rights of these unfortunate children, as they became apparent to the public mind, have been fairly well established. But what of their social rights?

Unquestionably, the establishment of the illegitimate child's rights was, and still is, the first consideration—it must so be for the protection both of the child and the State, especially in cases where one or both parents are known. Naturally and logically then, the adjustment of the legal phases of such cases has occupied the major portion of the time and effort of child welfare bureaus, as is reflected by the character of the enacted laws. Under the old order of things such legal adjustment was sufficient, and accordingly helpful legislation was not developed further.

The old order has given way to the new, and although formerly the statements of the child or its parents as to name, age, and relationship were accepted; now the presentation of a duly authenticated birth certificate has become an almost universal prerequisite for admittance to school or employment, or for foreign travel. Small barrier, this, to the legitimate child or his parents who have merely to apply for a certified copy or a transcript of the birth record—but what of the illegitimates, adopted children, and foundlings?

These and their foster parents or guardians are apt to find themselves in a predicament, for if they are successful at all in securing a record of the birth, that very act may carry with it most distressing revelations likely to permanently impair otherwise peaceful mental conditions and happy lives. Where can we find the remedy?

Again we are encouraged by the hopeful rays which appear to light the pathway of our search when we note from the "Analysis" a tendency on the part of some states, such as Iowa and North Dakota, to minimize the broadcasting of distressing trial details by statutory exclusion of the public, or vest the power of such exclusion, as in New York and Minnesota, in the trial judges.

We are further heartened by finding among the Statutes of Colorado (Laws of 1925, ch. 133—Maternity Hospitals) that the divulgence or disclosure of the contents of any records relating to illegitimate children is prohibited.

We are convinced that our attitude is right when we read in Section 7 of this Colorado Act:

> That this chapter shall be liberally construed *with a view to effecting its purpose which is primarily to safeguard the interests of illegitimate children, and those*

of undetermined legitimacy born in maternity hospitals as herein defined, and secure for them the nearest possible approximation to the care, support and education that they would be entitled to receive if born of lawful marriage, *which purpose is hereby acknowledged and declared to be the duty of the State.*

In the words "secure for them the nearest possible approximation to the care, support and education that they would be entitled to receive if" lies the sought for antidote. True, it is there only in embryo as it were, not specifically expressed by the addition perhaps of the words "and rights of citizenship," following the "care"—"support"—"education" benefits now provided. Nevertheless it is inconceivable that the Colorado Legislature could have had other intent than that these unfortunates should be equally vested with the "inalienable constitutional rights" of "life, liberty and the pursuit of happiness," as are children legitimately born. Now, in the light of dawning consciousness of the social factors mentioned, and in the discernibly favorable crystallization of public opinion indicating that the time is ripe for action, how can this be accomplished so thoroughly, humanely and sensibly that it will practically insure for these children immunity from unnecessary embarrassment, pain, or disgrace, from the time of the launching of their individual careers—their advent into school or employment?

Clearly it is most desirable to secure such legislation as will authorize and enable bureaus of vital statistics or other custodians of birth records to include among their functions, subsequent to the taking of required statistical data, the suppression of such original records or statements of facts as may have become nullified, readjusted or supplanted through legal procedure accomplished after the time of registration.

As members of this Association primarily concerned in the record keeping which is a counterpart of birth registration, both in our respective states and at the U. S. Bureau of the Census—we seem to be, logically, the missionaries who should bring about the rectification of the existing evils. If we are registrars of vital statistics, ours is a dual rôle—on the one hand, as statistical craftsmen we must insist on the accuracy of the basic data, but on the other, in serving the public we must do all possible to furnish only such copies of birth records as will best promote the welfare of the persons concerned.

Due to our unique positions, we are best qualified to act. It is signally fitting, therefore, that we should take the lead in this matter, and accordingly the following plan of my associate and collaborator is respectfully submitted for consideration:

Legitimation, Adoption and Foundlings

Registrars of vital statistics are guardians and trustees of the interests of the people. This is peculiarly true in relation to records of birth.

In drafting the "Model Law" for the registration of births, stillbirths and deaths, three very important classes of cases were apparently entirely overlooked, namely cases of legitimation of birth, those of adoption, and those of foundlings. In consequence many children are often unjustly stigmatized as bastards, and the birth records of adopted children frequently cannot show their legal names by adoption. In many cases of adoption there is also the stigma of bastardy. A foundling has no birth record.

When a child begins to attend school in many states he is required to present evidence that his birth has been recorded. A certificate for "John Jones" is not satisfactory in the case of a boy legally known as "John Miller." It must be accompanied with other evidence showing illegitimate birth, or legal adoption, or both. This not only is a direct injury to the child, and a cause of embarrassment for parents, but seriously interferes with the placing of children in desirable homes.

The statutes of the states relative to these subjects vary. Minnesota, for example, provides for reporting cases of legitimation to the vital statistics office; but in a certified copy of birth record, it does not prohibit the certification of illegitimate birth.

The statutes of Illinois may be considered typical for the country at large, and are therefore taken as the basis for this presentation, in order that specific sections may be cited. With slight changes in wording the recommendations would apply for many other states.

A common law marriage is not recognized in Illinois. It is illegal, and births from such unions are therefore illegitimate. Chapter 89, Smith-Hurd Statutes of Illinois, Section 17(a), however, provides that although the marriage may have been contrary to law, if the parents "have attempted to contract and be joined in marriage, and some form of marriage ceremony recognized by law has been performed in apparent compliance with the law in relation to marriage," the issue of such union "is hereby made legitimate and may take the name of the father, though such attempted marriage is declared void or might be declared void for any reason."

Chapter 39, Smith-Hurd Statutes (relative to descent of property), in Section 3 says:

> An illegitimate child, whose parents have intermarried and whose father has acknowledged him or her as his child, shall be considered legitimate.

Chapter 17 (relative to Bastardy) in Section 15 provides:

> If the mother of any bastard child, and the reputed father shall at any time after the birth intermarry, the said child shall, in all respects, be deemed and held legitimate and the bond aforesaid be void.

There is no provision in the statutes for reporting such acts of legitimation to the vital statistics office, and the Attorney General has held that the Registrar has no authority to accept such documents when offered, nor to permit a change in the record of illegitimacy.

The Illinois Vital Statistics Act, Chapter 111½, Section 48, prohibits that a certificate of birth for an illegitimate child shall

> . . . contain the name or other identifying fact relating to the father or reputed father or to the mother thereof, without the consent of said father or reputed father to the use of his name, nor the use of the name of the mother without her consent to the use of her name.

Under present statutes the birth registration of illegitimates is therefore frequently very defective from a statistical standpoint.

It is therefore suggested that vital statistics acts be amended by providing that in case an affidavit is presented to the State Registrar, signed by the father, acknowledging the paternity of the child, and the fact of place and date of his legal marriage to the mother of the child, a new certificate of birth may be filed which shall be considered as the record of birth; and it should further provide that the original certificate of illegitimacy and the aforesaid affidavit shall be placed in a sealed package, only to be opened under orders from a court of record. It should also be provided that in case of marriage of the parents of an illegitimate child before a certificate of birth has been filed, such child shall be considered as legitimate at birth.

Chapter 4 (relative to Adoption) provides in Section 3 that on the filing, hearing and granting of a petition for adoption in the proper Court

> . . . a decree shall be made, setting forth the facts and ordering that from the date of the decree the child shall, to all legal intents and purposes, be the child of the petitioner or petitioners, and may decree that the name of the child be changed according to the prayer of the petition.

This section should be so amended as to require that when the name of the child is changed, the clerk of the court shall send an attested copy of the decree to the State Registrar of Vital Statistics. Then on receipt of such copy the State Registrar shall cause to be made a new record of the birth in the new name, and with the name or names of the adopting parent or parents. He shall then cause to be

sealed and filed the original certificate of birth with the decree of the court, and such sealed package shall only be opened upon the demand of said child, or his natural or adopting parents, or by the order of a court of record.

The state has a peculiar responsibility relative to foundlings. The state has not fulfilled its obligation when it provides for their care, food, and clothing. It must also provide for proof of citizenship and age. At present there is no statute in Illinois which requires or even authorizes a legal registration of foundlings. Birth certificates are impossible. When such a child should enter school, attempt to work, try to register as a voter, or require the protection of the government as a citizen, how is he to establish his rights? This question is of greater importance since the registration of all births has been required by law. It seems, therefore, that a statute should be enacted which will require that the *finding* of an unknown child shall be immediately reported to the local registrar of vital statistics; such report to show the sex and color of the child, the date and place of finding the child, and the name of the person or institution with whom it is placed. The city, village, township, or road district in which the child is found should be known as the place of legal birth. Inasmuch as the date of birth is unknown, the report should state such date as nearly as can be determined, and the date so given should be known as the legal date of birth.

The person or institution with whom the child is placed for care should be required to give it a name, and report the same to the local registrar. The "Certificate of Finding" should then be sent to the state registrar, and there filed. If the child should later be identified, and a certificate of birth be found or obtained, such fact should be reported to the state registrar, and indorsed upon the "Certificate of Finding," with citation to the certificate of birth.

RESOLUTION ADOPTED BY THE VITAL STATISTICS SECTION

RESOLVED that in the opinion of this Section, methods should be devised and made legally effective for the correction of birth records of children legitimatized, and of adopted children, and also for the registration of foundlings; and be it further

RESOLVED that a committee of five be appointed by the chair to consider and report, at the next Annual Meeting of this Section, the advisability of a uniform or "standard" system for:

1. Acts correcting birth records of illegitimate children subsequently legitimatized
2. Acts regulating birth records of children legally adopted
3. Acts for the making of birth records of foundlings

Fungus Infections of Skin of Industrial Workers*

ROBERT T. LEGGE, PH. G., M. D.

Professor of Hygiene, University of California, Berkeley, Calif.

THE medical and public health professions in this country must awake to the realization of the importance of mycotic infections as a causative agency in disease. In a previous paper[1] a plea was made that at least every state hygienic laboratory should have on its staff a trained mycologist to aid physicians, and sanitarium and hospital authorities in the identification and diagnosing of fungus diseases.

Mycotic infections are not strictly confined to dermatology, but are an important factor in internal medicine; the incidence of morbidity being higher among the industrial group. One need only consult the literature to find blastomycotic infections among paper workers, sporotrichosis in gardeners and malt handlers, aspergillosis of the lung common in French pigeon feeders, and actinomycosis among herdsmen and farmers.

On the Pacific Coast, many contributions have been published of fungus diseases among industrial and agricultural workers. Some 134 cases of coccidioidal granuloma[2] have been reported in California, particularly in and about the San Joaquin valley. Many of these victims were engaged in out-of-door occupations, which suggests that the infection may be present in the soil or upon vegetation. This seems the more probable, as H. J. Templeton's case was a cotton mill hand who probably contracted coccidioidal granuloma from cotton grown in this valley. There was another case of coccidioidal granuloma of the hand following an injury by wire.

On account of the saprophytic nature of the genus *Penicillium* which is so common in nature, workers in out-of-door vocations may contract a pulmonary disease having a mucopurulent expectoration, often bloody, with fever and emaciation; a typical picture of tuberculosis, with the exception of being negative for tuberculosis bacillus. Three such cases came in to our service, which were proved by mycological examination to be broncho-penicilliosis, and which made un-

* Read before the Industrial Hygiene Section of the American Public Health Association at the Fifty-ninth Annual Meeting at Fort Worth, Tex., October 27, 1930.

eventful recoveries through the administration of iodides, and the use of autogenous vaccines made from the sputum.

Kingery and Thienes reported, before the American Dermatological Association in 1924, a mycotic paronychia which appeared among workers in fruit canneries of the Northwest. During the pear season the incidence is marked, running as high as 33 per cent. This has been commonly known as "fruit poisoning." There is a marked paronychia, characterized by an inflammatory reaction, pain, swelling, and loss of finger nails. Frequently there is maceration, and cracking between fingers, and vesiculation on the hands and forearms.

H. Sutherland Campbell, of Los Angeles, has observed that certain workers whose fingers came in contact with the pulp or juice while engaged in squeezing cull oranges in the manufacture of orange juice acquired a fungus infection producing a paronychia. The yeast-like organism supposed to cause this infection belongs to the *Mucoraceæ* family.

Recently R. H. M., a painter, was referred to me. He had a severe dermatosis of both hands, and stated that it was due to turpentine. He made application for compensation to the State Insurance Fund, claiming it was an occupational disease. Upon microscopical examination of skin scrapings it proved to be epidermophytosis. Undoubtedly this case was aggravated by the solvents employed in mixing paints, and still may have been a secondary fungus invasion superimposed on a traumatized skin from a coworker carrier, or from his own toe focal infection. Such cases require the keenest judgment on the part of the physician in order to render a fair and impartial decision.

From an industrial point of view, every suspicious skin irritation warrants a careful routine inspection for a possible fungus infection. On account of the universal prevalence of foot ringworm, one can readily see how other parts of the body can be infected, independent of the patient's occupation. We found that 10 per cent of the university students infected with tinea cruris had superimposed a *Trichophyton interdigitale* fungus, undoubtedly carried by the towel when drying the feet and later the groin. Due to this fact, as a public health measure, all bathers when using a towel should always dry the body first and the feet last; the towel then being sent to a steam laundry.

Upon the return of the U. S. Volunteers from the Philippines in 1899 the so-called dhobie itch or "Shanghai foot"[5] was a common infection among the troops, causing much disability, and was a factor in disseminating foot ringworm in this country.

Ringworm of the feet is the most common fungus disease in America today, not only affecting workers in bathhouses and gymnasiums, but also students, clubmen, and the general laity who frequent common showers, swimming pools, hotels, and golf and athletic clubs.

At the University of California during the fall semester, 1928, when the compulsory physical examination was conducted for all freshmen, it was found upon careful examination of the toes that 51½ per cent of the men and 15⅓ per cent of the women were infected with ringworm. The principal fungus responsible for this common infection is *Trichophyton interdigitale*. Bonar, the mycologist working in our research group, has observed that when replants of a single spore in a culture are made, the resulting growth when aged sufficiently may change in character, making it difficult to identify the morphology of the different types of moulds reported by investigators. Two varieties have been definitely studied that differ in morphology and spore formation. We have been able to determine that the fungus will grow readily in human skin and hair, and in fact any animal tissue, such as wool, silk, bone, horn and leather, and only sparingly in wood, providing some favorable protein is present. We have not been able to grow on media the *Trichophyton interdigitale* from scrapings from shower floors on account of the abundant growth of funguses that crowd out the pathogenic moulds. We are convinced however by the saprophytic nature of the fungus that it multiplies and continues to keep up infection, by the countless skin scales and hairs that are cast or washed off the body during the process of taking a shower or disrobing. The next bather picks up the organisms on his feet, and this is the method of contracting the disease.

The laboratory investigator may be able with certain fungicidal chemicals to destroy the mycelia and spores *in vitro,* but when they are applied clinically it is a different matter entirely, as they may be destructive to the tissues or only affect the epidermis superficially. We have removed thousands of pieces of skin from infected individuals, and proved clinically by culture and microscopic examination that the funguses were present. These bits of infected skin can be soaked in alcohol and sterilized, which will destroy the bacteria and mycelium present, but when they are washed and placed in a plate of sterile Leonians' agar at room temperature, mycelium will appear in a few days, definitely proving that the spores are deeply imbedded in the tissue, and demonstrating the uselessness of many ointments and lotions that are in use therapeutically.

With this important knowledge of the spores' habitat in the living

infected skin, we have tried to determine some fungicidal method for their destruction. For the past 2 years some 26 chemical agents known to dermatologists, mycologists and experimental workers have been studied in our laboratory and clinic, and the ideal specific has not yet been discovered. Among the halogens, iodine in glycerine is efficient; of the stearoptens, thymol 1 per cent or 2 per cent ranks preeminent; of the acids, salicylic, benzoic and sulphurous are useful; and among the dyes, crystol, first introduced by the author, gives much promise.

As the result of our researches in cultivating ringworm fungus on all types of animal tissue, such as wool, silk, leather, etc., we advise that all gymnasium clothing should be of cotton or linen, and socks and jock straps of cotton. Woolen socks favor the growth of the funguses, and as laundries do not boil woolen socks on account of the shrinkage a constant source of infection is maintained.

We have demonstrated that a temperature from 75 to 100° C. will destroy the *Trichophyton* spores; which fact is of great public health value in prescribing laundry ordinances.

Three other important problems confront the sanitarian: The first is disinfection of shoes worn by patients who have ringworm; leather, being animal tissue, is a constant nidus for spore multiplication and consequently re-infection to the wearer. We have tried dusting the inside of the shoes with sulphur, which is an excellent fungicide, but it may cause a dermatitis. On account of its lethal and penetrating qualities, 1 per cent thymol dissolved in alcohol or gasoline and poured into shoes, then allowed to drain and dry, seems to be very effective.

The second factor is the disinfection of floors, runways to pools and showers; a most difficult problem. To secure a cheap, reliable, noninflammable and nonodorous fungicide that will not corrode the floors and tiles, and at the same time be nonirritating to bare feet, has been our hardest problem. Every hotel, club and swimming pool manager is intensely interested in securing an ideal disinfectant. Bichloride of mercury 1:1,000 which *in vitro* will kill spores of *Trichophyton interdigitale* in 3 minutes could be added to a floor cleaning compound or solvent, as an effective economical fungicide. Third, to the remote corners of the earth should be broadcast this slogan to prevent ringworm of the feet—

NEVER PLACE THE BARE FEET UPON THE FLOORS
OR SHOWER BATHS IN PUBLIC PLACES.

At the University of California[5] when the women students' feet were examined upon matriculation, 15 per cent of the freshmen en-

trants had ringworm. On account of the rigid rule that all students must wear rubber bathing slippers when in the gymnasium, pools and showers, the incidence of infection had only increased 2 per cent a year later when reëxamination took place.

An important procedure is suggested in the interest of public health—that when a person uses a public shower and sandals are not available, he step on heavy newspaper or towel when bathing and also when drying the feet.

Hotel keepers are now supplying paper slippers for their guests and the time is ripe for swimming and athletic club managers to supply rubber or wooden sandals for their customers, which after being worn are sterilized by boiling. Such suggestions as these offer the best measures to prevent one of the most important infectious diseases that confront our profession today.

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Sir Andrew Balfour

IT seems to me fitting before beginning this lecture that I should also refer to the greatly lamented decease of my predecessor as Hastings lecturer, Sir Andrew Balfour. A year ago Sir Andrew Balfour lectured on the subject which reflected his life's work and interests—namely, ' Health and Empire.' Balfour was of the salt of the earth, capable and efficient in all he undertook, whether it was playing football for Scotland, administering in unhealthy tropical lands, or building up and directing the London School of Hygiene. With these qualities of distinction he was generous and open-hearted in all he did. Hastings and Balfour had much in common, and it is curious to note that just as Hastings, two years before he died, finished off a lecture with these words: ' England, may thou be destined to spread a knowledge of Sanitary Science over the globe: to set an example to other people of obedience to physical laws laid down by the Almighty: and, in the words of Milton's magnificent poem, " to lead the nations in the way of life," ' so also one of Balfour's last duties was to deliver his lecture on ' Health and Empire.' "—Edward Mellanby, M.D., *Brit. M. J.*, Mar. 21, 1931, p. 1387.

Training and Personnel*

FOR several years the Committee on Training and Personnel has collected data concerning students registered in schools of public health and the public health degrees granted. The following is the report for the calendar year 1930.

TABLE I

NUMBER OF STUDENTS ENROLLED AND PUBLIC HEALTH DEGREES OFFERED AND CONFERRED IN 1930, IN COURSES REQUIRING AT LEAST ONE YEAR OF RESIDENCE AND LEADING TO A PUBLIC HEALTH DEGREE

School	Degrees	No. Enrolled 1929–1930	No. of Degrees Granted 1930
University of California	A.B.	17	5
	M.A.	1	1
	Dr.P.H.	0	0
	Ph.D.	0	0
Columbia University	M.S.	7	0
	Ph.D.	1	0
University of Georgia	B.S.	3	2
	M.S.	2	1
	Dr.P.H.	4	4
Harvard School of Public Health	M.P.H.	12	6
	Dr.P.H.	1	1
Johns Hopkins School of Hygiene	C.P.H.	31	24
	S.M.	4	—
	Sc.D. in Hyg.	44	14
	Dr.P.H.	5	5
Massachusetts Institute of Technology	S.B.	65	8
	S.M.	0	0
	C.P.H.	6	4
	Dr.P.H.	2	1
	Ph.D.	4	0
McGill University	D.P.H.	0	0
Queen's University	D.P.H.	0	0
University of Michigan	M.S.	16	4
	Dr.P.H.	12	1
University of Minnesota	M.A. or M.S.	3	1
	Ph.D.	1	0
Ohio State University	M.S.	3	1
University of Pennsylvania	Dr.P.H.	0	0
University of Toronto	D.P.H.	13	12
	M.A.	2	1
	Ph.D.	5	0
University of Western Ontario	D.P H.	0	0
	Dr.P.H.	0	0
Yale School of Medicine	C.P.H.	8	3
	M.S.	2	1
	Dr.P.H.	1	1
	Ph.D.	11	1
Total		286	102

* Report of the Committee for 1930.

TABLE II

NUMBER OF DEGREES IN PUBLIC HEALTH GRANTED IN UNITED STATES AND CANADA 1930

Degree	Degrees Granted	Number of Schools Offering the Degree
Certificate of Public Health	31	3
Doctor of Public Health	13	9
Doctor of Science in Hygiene	14	1
Doctor of Philosophy	1	6
Bachelor of Science	10	2
Bachelor of Arts	5	1
Master of Arts	3	3
Master of Science	7	8
Master of Public Health	6	1
Diploma of Public Health	12	4
Total	102	

Of the above institutions only two have correspondence courses:

	Name of Course	No. of Students
Columbia University (Given through Home Study Department with National Tuberculosis Association)	"Methods and Programs of Tuberculosis Work"	36 enrolled
University of Minnesota	"Elements of Preventive Medicine" given primarily for public health nurses and school health workers	5 (finished course last year)

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U. S. Public Health Station Opened in Mexico City

THE first office of the U. S. Public Health Service to be opened in Latin America has been established in Mexico City at the United States Consulate General under the direction of Dr. Howard Franklyn Smith (major U. S. M. C.), surgeon of the U. S. Public Health Service.

There are 29 similar offices in Europe at American consulates. These are located in districts which are sources of heavy immigration to the United States.

Tuberculosis Death Rates

FIGURES of the tuberculosis death rate compiled by Godias J. Drolet, New York Tuberculosis and Health Association, in 45 large cities for 1929–1930, show a total decrease of 7 per cent in the rate. Only 5 of the number show an increase, and of these, 3 are in the North, and 2 in the South. Very different is the story of the death rate among the colored in 39 large cities. Many of the northern cities had a marked increase for the colored race, New York leading in the increase in the total number of deaths, while Chicago showed a decrease. Memphis, Tenn., and Dallas, Tex., were the only southern cities, geographically, which had a marked increase. In some of the centrally located cities there was an increase in deaths; in others, a decrease. Indianapolis had a decrease of 22, and St. Louis, 17, while Washington, Baltimore, and Cincinnati had marked increases. Mr. Drolet says:

> Between 1920 and 1928 the tuberculosis reduction among whites was 12 per cent in the southern cities, 38 per cent in the central cities, and 41 per cent in the northern cities.
>
> Among the colored, deaths from tuberculosis in the 8 southern cities increased in 3 and were almost stationary or declining in the other 5, the net result being an increase from 1,250 to 1,308, namely, by 58 or 4 per cent; in the central cities the tuberculosis mortality among the colored declined in 3 and increased in 5 so that as a net result the mortality of 1920 rose from 1,492 to 1,596 in 1928, or by 6.5 per cent; in the 8 northern cities, in Pittsburgh there were 2 deaths less in 1928 than in 1920, and in all 7 others the mortality increased so that from 2,016 deaths among the colored in 1920 the total rose to 3,209 in 1928 or by 37 per cent. In other words, in the northern cities as against a decline in the number of tuberculosis deaths among whites of 41 per cent we have an increase among the colored of 37 per cent; in the 8 southern cities, the white tuberculosis mortality in its gross total was reduced by 12 per cent but that of the colored rose by 4 per cent.

The cause is not clear, though the tremendous emigration of Negroes from the South to the North, which has taken place during the last few years, probably has something to do with it. Certainly it has been accompanied by much suffering from tuberculosis and in some cities has greatly complicated the tuberculosis problem. However, it seems reasonably sure that when the census returns are available by race, it will be found that the death rate among the colored in northern cities for 1930 is lower than it was in 1920. In other words, in spite of some discouraging figures, there seems to be a distinct improvement in the tuberculosis situation.

EDITORIAL SECTION

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PUERPERAL FEVER

PUERPERAL fever continues to be a blot on the escutcheon of preventive medicine. For some years after the discoveries of Pasteur, it was often said that any physician who lost a case from puerperal fever was criminally responsible. Obstetricians in many countries are awake to the situation, and a good many propositions to avoid infection have been made and tried out. Digital diagnosis of the presentation is avoided by many, but in spite of our efforts, the death rate from puerperal fever still remains high. We have published one editorial on this subject,[1] suggesting that the presence of hemolytic streptococcus in the upper respiratory tract was a probable source of infection.

In Great Britain a number of studies have been made, the most recently published being those in the Hospital for Infectious Diseases of Aberdeen, Scotland. For 8 years, during which 221 cases of puerperal fever and 25 cases of septic abortion were admitted, bacteriological examinations, chiefly of the nose and throat of the attendants, were made, and the patients themselves more completely examined. In 221 cultures from the interior of the uterus, the hemolytic streptococcus was found 149 times, being the only organism present in 120 cases. Blood cultures were positive for this organism in 22.9 per cent of the cases, and only 3 per cent showed the presence of other organisms. It was present in 43 of 46 fatal cases.

In the cases of abortion, the *S. hemolyticus* was found in pure cul-

ture from the uterus in 11 cases. In 3, the *B. coli* was found. It was obtained in pure cultures in 15 of these uterine cultures, and in 12 the source was definitely the nose or throat of the physician, nurse, or student attendant. In one, the infection seemed to be autogenic, there being a focus of infection in the patient's hand. The 3 colon cases originated from the urinary tract or the intestine.

The suggestions made by the investigator and the Department of Health for Scotland, under whose auspices the publication was made, are the wearing of masks by physicians, midwives and nurses, and more careful preparation of the hands.

These studies have been carefully controlled and carry conviction. With our present knowledge of bacteriology and the wonderful advances made along most lines in this science, as well as its practical applications, it certainly seems that we should be able to prevent the maternal mortality which remains so high. Our showing in America is something of which we have no cause to be proud, and any suggestion which holds out the hope of improvement will doubtless be welcomed by practitioners engaged in this line of work.

REFERENCE

1. *A. J. P. H.*, 20, 9: 982 (Sept.), 1930.

UNPROFESSIONAL ADVERTISING

EVERY rose has its thorn. There is an army made up of earnest men and women, some well trained, and some not, conscientiously working for the betterment of health. This is the rose in the picture. The interest of the public in health has been seized upon by advertisers to exploit everything from tooth paste to corn cures, including those diseases which constitute the major tragedies of human life—cancer, tuberculosis, etc. This is the thorn in the picture.

Our newspapers are full of the most preposterous statements, and for some time, supposedly reputable physicians and health officers have lent their names to statements, many of which go beyond knowledge or facts. Not only have our American physicians been selling their names to advertisers, but foreigners have been brought in almost wholesale. In practically every case the advertisements state that these men are "noted," "famous," or "experts." Now and then they get hold of people who are actually well known, and who should know better than to lend themselves to such deception of the public.

The American Public Health Association has always stood against such practices. Within the past year members of the Association and some who have reached the dignity of Fellowship, and are even health

officers, have signed advertisements of various products. Feeling that this is a scandal affecting our honor, the following resolution amending the By-laws was passed by the Governing Council at the Annual Meeting in Fort Worth, October 30, 1930:

> If, in the opinion of the Executive Board, any member or Fellow of the Association be found (hereafter) to have permitted the use of his name, or otherwise to have allowed himself to be quoted or used for illustration in the advertising of a commercial product, in such a manner as to reflect discredit upon the Association, his Fellowship or membership in the Association shall thereupon be terminated. The application of this article shall not be retroactive.

The enforcement of the provisions of this resolution lies with the Committee on Fellowship and Membership. The Executive Board of the Association has asked for the publication of the resolution. We therefore commend its careful study to those members and Fellows who have allowed themselves to engage in the practice condemned. We earnestly beg that those who have the honor of being members or Fellows of this Association refuse the use of their names in advertisements of any and every sort. One of the great functions of this Association is to instruct the public in matters of health. When a member sells his name for the exploitation of all sorts of products, he strikes a blow at the dignity of the profession to which he owes allegiance, and breaks down the confidence of the public in it.

THE LEONARD WOOD MEMORIAL CONFERENCE ON LEPROSY

THERE was held in Manila, January 9–23, 1931, an International Conference on Leprosy under the auspices of the Leonard Wood Memorial. Stress was laid on the importance of an international understanding among those studying the disease, since great confusion has existed concerning situations and practices. It was advised that leprosy workers be afforded opportunities of making study tours and be transferred from one region to another in order to study the peculiarities and conditions in other countries. Since the term "leper" carries social stigma, it was advised that the word be dropped, and the phrase "case of leprosy" be used.

The clinical classification recommended was: (a) neural, and (b) cutaneous, though it was recognized that it was a general disease seldom or never confined to one tissue. "Open" and "closed" cases were recognized chiefly with regard to administrative action. The lesions were classified and terms suggested for them, with the hope that standardization among writers and workers would result. Those

ulcers, due directly to the disease, which discharge leprosy bacilli are called "leprotic," while those caused indirectly are "trophic," as they are usually the result of destruction of the nerve. Special stress was laid on the importance of early diagnosis, since treatment is more successful than in later stages. The use of some form of the chaulmoogra group of oils or their derivatives was stressed.

An important point discussed was the decision of whether cases were active, quiescent, or arrested. The last term was suggested as being more conservative. In general, the terminology concerning leprosy was brought more into line with that of tuberculosis. Many suggestions were made concerning research and the particular lines which it should follow.

Perhaps the most important action was the formation of an International Leprosy Association, with Dr. Victor G. Heiser, President. It was decided also to publish a *Journal of Leprosy*, with Dr. H. W. Wade of the Culion Leper Colony as temporary Editor, assisted by Dr. Lie of Norway, and Dr. Maxwell of China.

A VALUABLE IDEA FROM JOHNS HOPKINS

THE recent action of the faculty of the School of Hygiene and Public Health of Johns Hopkins University is extremely significant to the teaching profession. The School of Public Health was founded through the efforts of Dr. William H. Welch and he was its first Director. He was succeeded by Dr. William H. Howell, a physiologist of world-wide reputation. His retirement in 1931 led to the necessity for some change and the selection of a new head for the school. The faculty showed its wisdom in selecting Dr. Wade H. Frost as its Dean, the office of Director having been abolished.

It seems that the faculty as a whole believed that the control of the school belonged properly to themselves. This is very different from the general practice in the schools of universities throughout the United States, since the faculty as a whole is not consulted, and the office of Dean goes only too often to some gumshoe politician or incompetent who has spent more time in toadying to the powers that be than in scientific work.

Really scientific men bent on research usually dislike administrative work, though some of them are forced into it by their prominence. This has been admirably expressed somewhat as follows: "When a man does notable scientific work, he is sterilized by being put in an executive position." The system in vogue in most institutions is not consistent with our ideas of democracy. Presidents occasionally want deans who have some ideas, but for the most part, they apparently

prefer men who will "go along," and support them in times of controversy.

At the Johns Hopkins School, a limit of three years has been fixed with the provision that the Dean cannot succeed himself. This has some excellent features, and some which are not so good, though it prevents the building up of cliques. A somewhat similar rule is in vogue in many scientific societies. In a school it means that the dean can return to his specialty within a few years and his election does not "sterilize" him for life. When a particularly good dean has been chosen, as is doubtless true in the case which has led to this discussion, there will naturally be regret when his term of service is over, though we cannot but approve of the fundamental idea and the spirit which has led to this change. We commend the action and its educational sanity to other institutions.

ASSOCIATION NEWS

SIXTIETH ANNUAL MEETING

AMERICAN PUBLIC HEALTH ASSOCIATION

Montreal—September 14–17

HEADQUARTERS—WINDSOR HOTEL

IN reply to a recent communication, more than 600 members of the Association have already expressed their intention to attend the Montreal Annual Meeting. Less than one-quarter of the total membership has been heard from, and if the same proportion holds throughout, the attendance will approximate 2,000, not including guests.

The Annual Meeting Program Committee has held two meetings, one with Section Secretaries. Aime Cousineau, Secretary of the Local Committee on Arrangements, has reported local progress in the organization of groups to plan entertainment, scientific trips, transportation, etc. Section Secretaries have received more offers of papers than in previous years, and in several instances, section programs are already complete. Special sessions on Rural Sanitation, Health Education and Toxoid Immunization are being arranged. There is considerable interest in the contemplated session on British Public Health Administration and invitations have been issued to a number of British authorities to present papers.

A number of luncheon and dinner sessions are planned, notably a dinner tendered in honor of Dr. Alice Hamilton, by the Industrial Hygiene Section, and a joint dinner meeting of the Health Officers Section, the International So-

ciety of Medical Officers of Health, and the American Association of School Physicians. The Public Health Engineering Section will hold its usual dinner meeting with the Conference of State Sanitary Engineers. The annual Banquet will be held at the close of the meeting on Thursday evening.

The preliminary program will be published in the August *Journal*.

POST-CONVENTION TOUR TO QUEBEC AND THE SAGUENAY RIVER

A FOUR–DAY Annual Meeting with its multiplicity of sessions, speakers, luncheon and dinner meetings, and close application to business of the day is sufficiently tiring to mind and body to justify a brief vacation at its close.

Because of the proximity of Quebec to Montreal and the beautiful scenery to be viewed on the St. Lawrence and on the Saguenay Rivers, the Executive Board has approved a 3-day, all-expense trip by steamer after the Montreal meeting. The S. S. St. Lawrence has been chartered for the occasion and will leave Montreal about midnight on Thursday, September 17. The following day will be spent in Quebec at the invitation of Dr. V. Martin, the Medical Officer of Health. The world-renowned shrine of St. Anne de Beaupre will be visited and Montmorency Falls. Saturday morning the steamer stops at Grosse Isle for an hour or two so that the Government Quarantine Station, under the direction of Dr. Pagé, may be inspected. Then follows a trip up the lovely Saguenay River. The return to Montreal will be made in daylight and delegates will arrive in time to board evening trains for home.

A detailed itinerary is in the mails at this time. Reservations may be made at once.

ANNUAL MEETING INFORMATION

REDUCED RAILROAD FARES

REDUCED railroad fares on the Identification Certificate Plan have been authorized by the several Passenger Associations in the United States and Canada, which will entitle all members and dependent members of their families to a special rate of a fare and one-half for the round trip to Montreal.

Under this plan an Identification Certificate *must be presented* to the ticket agent when purchasing tickets. (One will be mailed to every member of the Association about August 15.) This is the ticket agent's authority to issue to delegates and dependent members of their families a round-trip ticket to Montreal at the reduced rate. The routing should be specified when making the purchase, for the routing covered by the round-trip ticket cannot be changed at Montreal. All return tickets must be validated, before leaving Montreal, at the regular railroad ticket office.

It is suggested that all members consult their local ticket agents in regard to dates of sale and return limit of reduced-rate tickets, as these limits vary according to distance from Montreal.

The Passenger Associations have authorized a special rate of fare and three-fifths for delegates who are taking the post-convention tour to the Saguenay, or who wish to return to their starting point by a different route. They should purchase tickets with return limit 30 days from date of sale.

Rates from principal centers on both bases are given herewith. Because summer tourist rates are less from some points than either fare and one-half or fare and three-fifths, a table of such rates is also included.

Fare and one-half, fare and three-fifths or summer tourist fare should be specified when purchasing tickets.

RAILROAD RATES FROM VARIOUS CENTERS TO MONTREAL

	Regular Rate One Way	Special Rate Round Trip		Lower Berth One Way	Upper Berth One Way	Summer Tourist Round Trip †
		1½ basis	1⅔ basis *			
Atlanta, Ga.	$ 44.38	$ 66.57	$ 71.01	$13.50	$10.80	$ 71.81
Baltimore, Md.	20.71	31.07	33.14	7.50	6.00	33.80
Boston, Mass.	11.80	17.70	18.88	3.75	3.00	21.45
Buffalo, N. Y.	15.17	22.76	24.28	4.50	3.60	23.78
Chicago, Ill.	29.21	43.82	46.74	9.00	7.20	43.82
Cincinnati, O.	28.78	43.17	46.05	10.13	8.10	44.11
Cleveland, O.	21.81	32.72	34.90	6.38	5.10	34.41
Dallas, Tex.	61.19	91.79	97.91	19.50	15.60	96.72
Denver, Colo.	66.49	99.74	106.39	19.88	15.90	103.47
Detroit, Mich.	19.40	29.10	31.04	6.00	4.80	29.10
Duluth, Minn. (via Chicago)	38.74	58.11	61.99	13.50	10.20	65.20
Fort Worth, Tex.	61.19	91.79	97.91	19.50	15.60	96.72
Indianapolis, Ind.	28.98	43.47	46.37	11.25	9.00	44.43
Jacksonville, Fla.	50.56	75.84	80.90	14.63	11.70	81.60
Kansas City, Mo.	45.75	68.63	73.20	13.50	10.80	70.32
Los Angeles, Calif.	109.05	163.58	174.48	32.63	26.10	148.72
Louisville, Ky.	33.09	49.64	52.95	11.25	9.00	51.01
Memphis, Tenn.	45.50	68.25	72.80	15.75	12.60	72.05
Minneapolis, Minn.	39.57	59.36	63.32	12.75	10 20	65.20
Nashville, Tenn.	39.64	59.46	63.43	13.13	10.50	61.76
New Orleans, La.	56.67	85.01	90.68	18.00	14.40	92.56
New York, N. Y.	14.01	21.02	22.42	3.75	3.00	22.42
Omaha, Neb.	47.14	70.71	75.43	13.50	10.80	72.52
Philadelphia, Pa.	17.25	25.88	27.60	3.75	3.00	28.26
Pittsburgh, Pa.	24.37	36.56	39.00	4.50	3.60	38.50
Portland, Ore.	100.94	151.41	161.51	32.63	26.10	134.10
Salt Lake City, Utah	84.28	126.42	134.85	24.38	19.50	118.37
San Francisco, Calif.	109.05	163.58	174.48	32.63	26.10	148.72
Seattle, Wash.	100.94	151.41	161.51	32.63	26.10	134.10
St. Louis, Mo.	37.16	55.74	59.46	10.50	8.40	57.52
Washington, D. C.	22.15	33.23	35.44	7.50	6.00	36.10
Brandon, Man., Canada	52.60	78.90	84.16	13.75	11.00	84.15
Calgary, Alb., Canada	75.50	113.25	120.80	20.00	16.00	120.80
Charlottetown, Pr. E. I., Canada	20.70	31.05	33.12	5.60	4.50	37.25
Fredericton, N. B., Canada	16.35	24.53	26.16	4.35	3.50	29.45
Hamilton, Ont., Canada	12.85	19.28	20.56	3.45	2.75	22.50
Harbor Grace, Newfoundland	51.75	77.63	82.80	12.50	10.00	
Halifax, N. S., Canada	21.35	32.03	34.16	5.95	4.75	38.45
Juneau, Alaska	120.19	180.29	192.31	25.60	20.50	172.60
Kenora, Ont., Canada	44.40	66.60	71.04	11.55	9.25	77.90
Kentville, N. S., Canada	22.40	33.60	35.84	4.35	3.50	
Ottawa, Ont., Canada	3.85	5.78	6.16	2.50	2.00	
Port Arthur, Ont., Canada	34.10	51.15	54.56	9.05	7.25	61.40
Quebec, Que., Canada	5.65	8.48	9.04	2.50	2.00	10.15
Saskatoon, Sask., Canada	64.25	96.38	102.80	16.85	13.50	102.80
St. John, N. B., Canada	17.20	25.80	27.52	4.35	3.50	30.95
Toronto, Ont., Canada	11.50	17.25	18.40	3.10	2.50	22.50
Three Rivers, Que., Canada	2.90	4.35	4.64			
Vancouver, B. C., Canada	100.94	151.41	161.51	25.60	20.50	134.10
Winnipeg, Man., Canada	48.00	72.00	76.80	12.80	10.25	76.80

* Return trip may be made over different route.

† Summer Tourist Tickets will be sold from May 15 to and including September 30. Passengers using these tickets must return to starting point by October 31.

MAKE YOUR HOTEL RESERVATIONS NOW

MONTREAL is popular as a convention city. There is every indication even at this early date of a record attendance when the American Public Health Association and other affiliated societies meet there September 14–17.

The Windsor and the Mount Royal are the leading hotels. The Windsor is the headquarters hotel because of superior meeting hall facilities. Only a few hundred delegates can be accommodated at the Windsor. Single rooms there are decidedly limited. If you plan to attend the Montreal sessions, and wish to stay at the headquarters hotel, it is suggested that you make arrangements with an associate to occupy a double room.

The Mount Royal is a short block from the Windsor and can supply either single or double room accommodations.

Room rates for both hotels are given below, together with rates for other good Montreal hotels.

Make your reservation now!

MONTREAL HOTEL RATES

		Single Room		Double Room	
Hotel	*Room Capacity*	*Without Bath*	*With Bath*	*Without Bath*	*With Bath*
de la Salle	150	....	$3.00–$5.00	....	$4.00–$6.00
Ford	750	$1.50–$2.25	$2.50	$3.00–$4.50	$5.00–$6.00
Mount Royal	1,100	....	$4.00	....	$7.00
Place Viger	125	$3.00	$4.00	$5.00	$7.00
Queen's	500	$3.00–$3.50	$4.00–$5.00	$6.00	$7.00–$10.00
Ritz-Carlton	250	....	$6.00	....	$10.00–$12.00
Windsor	750	....	$4.50–$6.00	....	$8.00–$12.00

.....*(Cut off on this line)*.....

HOTEL RESERVATION BLANK FOR MONTREAL MEETING

AMERICAN PUBLIC HEALTH ASSOCIATION

SEPTEMBER 14–17, 1931.

To.....
(Name of Hotel)

Please reserve for me.....rooms for.....persons for the A. P. H. A. Meeting. (Cross [X] is placed after my preference.)

Single room.....Double room.....

Maximum rate per day for room $.....Minimum rate per day for room $.....

I expect to arrive..... If date of arrival is changed I will notify you at least 24 hours in advance.

Please acknowledge this reservation.

Name.....

Street Address.....

City..... State.....

NEW MEMBERS

The following list includes applicants who have been approved for membership in the A. P. H. A. by the Sub-committee on Eligibility. These new members have requested affiliation with the sections indicated, and action by the Section Council will follow.

Health Officers Section

Laura Arney, Elmwood Park, Ill., Commissioner of Health

G. N. Bilby, M.D., Oklahoma City, Okla., State Health Commissioner

C. M. Burchfiel, A.B., B.S., M.D., San Jose, Calif., Health Officer, Santa Clara County

Jean P. Decarie, M.D., Montreal, P. Que., Inspector General, Provincial Bureau of Health

Avery A. Drake, M.D., B.A., Flat River, Mo., Assistant Health Officer

Milford G. Flath, Stanley, N. D., City Health Officer

Will H. Moore, M.D., Valley City, N. D., City Health Officer

Wilbur N. O'Brien, Ph.G., Ph.C., Newburyport, Mass., Agent, Board of Health

Harry B. Torrey, Ph.D., M.D., Palo Alto, Calif., Professor of Hygiene and Physical Education

Laboratory Section

J. A. Trent, M.A., Pittsburg, Kans., Assistant Professor, Biological Sciences

Public Health Engineering Section

Rene Cyr, C.E., Montreal, P. Que., Assistant Sanitary Engineer, Provincial Bureau of Health

Marc Gilbert, B.A., C.E., B.S.A., Montreal, P. Que., Secretary of Sanitary Engineer, Dept. of Health

Adrien Plamondon, B.A., C.E., Montreal, P. Que., Consulting Engineer for Local Municipalities

Leo B. Wood, Flat River, Mo., Sanitary Engineer, Dept. of Health

Industrial Hygiene Section

Murl E. Fulk, B.S., A.B., A.M., M.D., Philo, O., Industrial Physician, Ohio Power Co.

Food, Drugs & Nutrition Section

Lawrence W. Bass, Ph.D., New York, N. Y., Assistant Director of Research, Borden Co.

Ray W. Clough, Ph.D., Seattle, Wash., Chemist and Bacteriologist, National Canners Assn.

Ruben W. Hills, San Francisco, Calif. (Assoc.)

Child Hygiene Section

Joseph B. Bloom, M.D., B.S., Pittsburgh, Pa., School Physician

Myrnie A. Gifford, M.D., Berkeley, Calif., Field Physician, Bureau of Child Hygiene, State Dept. of Health

Clare Terwilliger, A.B., R.N., New York, N. Y., Assistant Secretary, Murry & Leonie Guggenheim Dental Clinic

Public Health Education Section

Clifford S. Thompson, M.D.C.M., Montreal, P. Que., Medical Officer, Steel Co. of Canada

Public Health Nursing Section

Catharine S. Bastin, R.N., A.B., Portland, Ore., Assistant Professor of Applied Social Science and Nursing Education

Clara B. Gould, P.H.N., San Jose, Calif., Supervising Nurse, Santa Clara County Health Dept.

Edna M. Hardsaw, P.H.N., Charleston, W. Va., Supervisor of Public Health Nursing, State Dept. of Health

Emma S. Maylor, Albuquerque, New Mex., Public Health Nurse, Bernalillo County Health Dept.

Eunice T. Munson, R.N., Philippi, W. Va., School Nurse

Sarah I. Richards, R.N., Jensen, Fla., Staff Nurse, State Board of Health

Kathryn Schulken, R.N., Denver, Colo., Supt. Visiting Nurse Assn.

Hortense P. Stafford, R.N., Carbondale, Ill., U. S. District Nurse (Assoc.)

Helen M. Wolfe, Twin Falls, Idaho, Public Health Nurse, Health Unit

Epidemiology Section

R. R. Parker, Ph.D., Hamilton, Mont., Special Expert, U. S. Public Health Service, Charge Rocky Mountain Spotted Fever Investigation

Unaffiliated

Edward J. McKay, Woodside, L. I. (Assoc.)

DECEASED MEMBERS

SAMUEL H. DURGIN, M.D., Allston, Mass., Elected Member 1875, Honorary Fellow 1922

ALLEN HAZEN, New York, N. Y., Elected Member 1892, Fellow 1922

THOMAS F. KENNEY, M.D., Worcester, Mass., Elected Member 1918, Fellow 1922

V. A. MOORE, M.D., Ithaca, N. Y., Elected Member 1896, Fellow 1922

R. A. MARTIN, M.D., Petersburg, Va., Elected Member 1919, Fellow 1923

MARY ELIZABETH AYER, R.N., Northampton, Mass., Elected Member 1928

WILLIAM H. BEATTY, New York, N. Y., Elected Member 1930 (Assoc.)

H. T. G. NAUMANN, Port Huron, Mich., Elected Member 1917

PUBLIC HEALTH ADMINISTRATION

HENRY F. VAUGHAN, D. P. H.

EPIDEMIOLOGICAL MASTER CHART

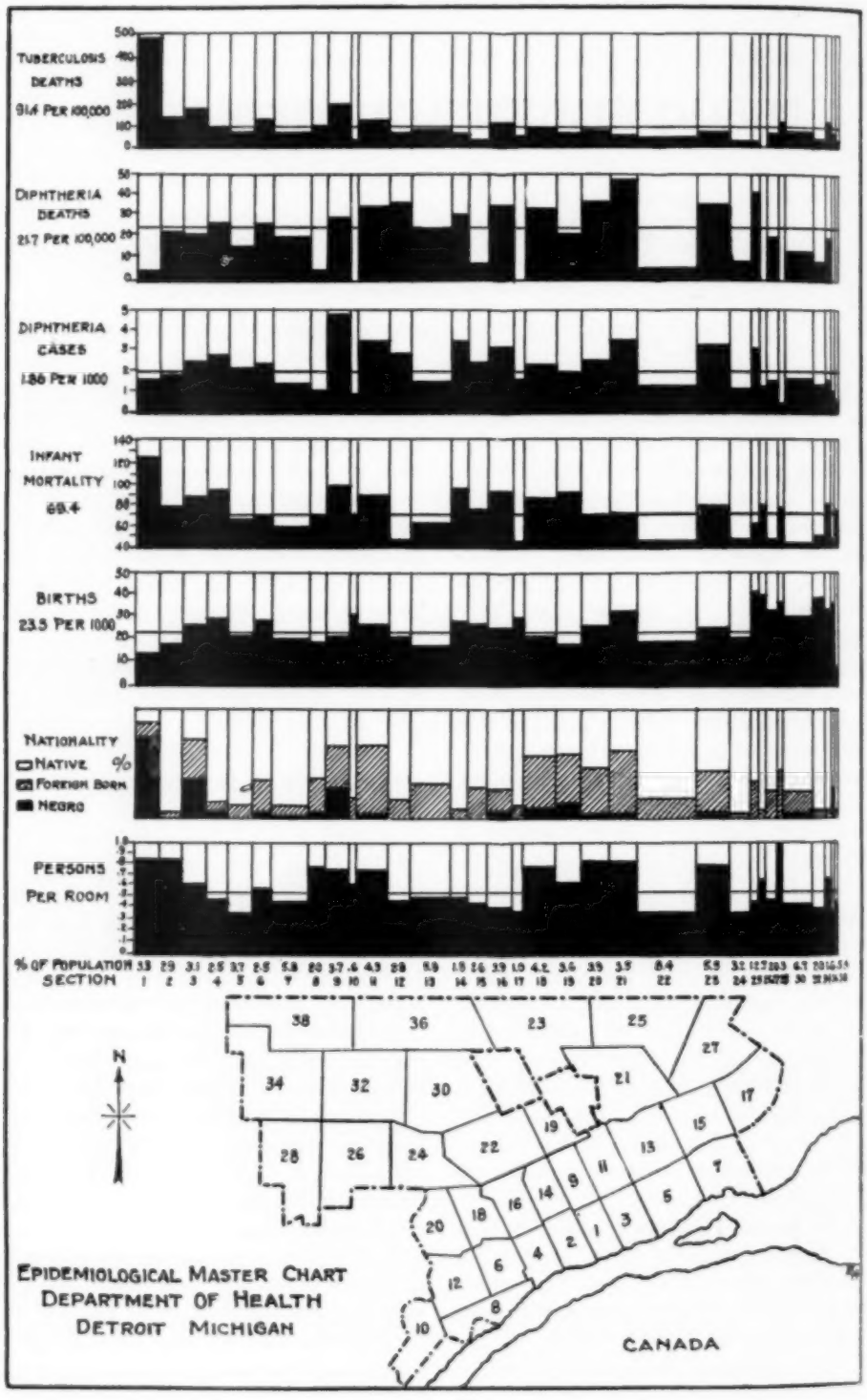
GEORGE B. DARLING, JR.

Assistant Epidemiologist, Department of Health, Detroit, Mich.

A NEED has long been felt for a simple graphical presentation of certain epidemiological data often correlated in analyses of public health problems. The need has been particularly acute in the supervision of large areas such as states or in the larger municipalities. For the statement of the problem, rates for the city or state have been sufficient; but for administrators faced with the necessity of attacking these problems at some definite point, it is essential that they be factored into their component parts. This is usually accomplished by division into districts. The common method has been to use maps and show by means of colors or different cross hatching the various degrees of the condition under analysis. The difficulties inherent in this type are familiar to all those who have used them. The necessity for many maps and the fallibility of visual perception lead to varying degrees of interpretation of the actual situation. Then, too, arbitrary groups must be assumed with limits defining the use of a particular color or cross hatching. Variations or trends within these artificial groups are lost entirely.

The master chart presented herewith has been very helpful in Detroit in analyzing the various problems indicated. It has been found particularly useful in two main fields—first, the intelligent planning of campaigns for the lowering of specific death rates; and second, in explaining to the mayor and common council, and other interested lay groups, the reasons for certain activities and the necessity for continued financial support. For example, in the recent campaign for the eradication of diphtheria the chart clearly indicated those districts in which intensive house-to-house canvassing by nurses would be most helpful.

The principle of the chart is simple enough. The city (or state) is divided into sanitary districts. The necessary information is compiled by district. The map shows the geographical relationship of district to district. The bar is divided into as many parts as there are districts. The districts are laid off in numerical sequence, the width allotted on the base line being that per cent of the length of the bar that the population of that district is of the total population of the city. The horizontal line then represents the average rate for the city, and the rate for the district is indicated by the height of the bar. The scales used are those most convenient for the graphical presentation. The rates from district to district are easily compared by the height of the bars. At the same time the area of the bar shows in direct proportion the number of people affected by that rate. Thus it may be seen at a glance that a high rate in a certain district may affect a very much smaller number of people than a low rate in another district which may


TUBERCULOSIS DEATHS 91.6 PER 100,000
DIPHTHERIA DEATHS 21.7 PER 100,000
DIPHTHERIA CASES 1.86 PER 1000
INFANT MORTALITY 69.4
BIRTHS 23.5 PER 1000
NATIONALITY %
NATIVE
FOREIGN BORN
NEGRO
PERSONS PER ROOM
% OF POPULATION
SECTION
N
CANADA
EPIDEMIOLOGICAL MASTER CHART
DEPARTMENT OF HEALTH
DETROIT MICHIGAN

as a consequence be of much greater significance in its effect on the rate of the city as a whole.

A word should be said about the bar on nationality. In the chart as it is used in Detroit the foreign born groups are divided into their major nationalities and indicated by various colors. The prohibitive cost of reproduction of the chart in that form for publication makes the demonstration of the value of this method impossible. It has been found extremely helpful however. For instance it will be seen from the chart that the districts with the highest diphtheria rates have the highest percentages of foreign born. It was found upon analysis that Polish was the highest single contributing nationality and was represented in its correct proportion by a yellow horizontal band. The advantage of this information to an administrator about to throw a large number of nurses in the field is obvious.

Correlation of the high tuberculosis death rates with high percentages of colored population is easily seen as is the reverse relationship in regard to diphtheria rates.

The bar on density of population shows the worst crowding in a district with a relatively small number of people. If this is compared with the various morbidity and mortality rates for the district and also with the actual area as shown by the map the value of the chart is well illustrated.

Of course, in this reproduction the number of items has been limited but all of the information necessary to the adequate understanding of a city by its health officer may be so charted. The method has also been found very valuable in comparing the trend of a particular condition over a period of years. For this purpose the bars are used for intervals of time rather than for various items.

The epidemiological master chart is offered as a new tool in the statistical approach to the complex administrative problems of public health.

LABORATORY

JOHN F. NORTON, PH. D.

USE OF OCULISTS' LOUPE IN THE ISOLATION OF PURE BACTERIAL CULTURES

IVAN C. HALL, PH. D.

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THE successful isolation of pure cultures by the methods of Koch and Hesse depends, as is well known, upon securing a sufficient separation of the cells in or upon the medium to permit each to develop a new colony apart from other colonies. If two or more daughter cells cling together and form a single colony, as in the case of the diplococci or the streptococci, it makes no difference whatever; all of the cells of the new colony have been derived from a single parent cell, and succeeding cultures transferred from such a colony will be pure, precisely as if a single cell had been transferred by a Barber pipette.

The principal error involved in cultural methods of isolation depends upon the possibility that occasionally two or more cells of different parentage may adhere and their progeny be represented together in the colony. If the associated species should happen to be of similar morphology or if one should greatly outgrow the other, the chance of detecting the impurity microscopically would be very slight. In isolating aerobic bacteria from agar plates one occasionally transfers obligate anaerobes whose presence is not at first detected, and in isolating anaerobic bacteria from deep agar one sometimes carries along a second species whose specialized requirements for growth were not met in the medium used, thus resulting in impure cultures. These contingencies fortunately are not very common; the first may be overcome easily by repeated aerobic transfers, the second, by the use of different kinds of mediums for successive isolations.

A much more common source of impurity in fished cultures is the adjacent growth of minute colonies that can be detected only by a meticulously critical microscopic examination. Surprisingly few of the recent textbooks emphasize this point although it is well covered and in essentially similar fashion by Zinsser's *Textbook of Bacteriology* (1929) and by Park and Williams' *Pathogenic Micro-organisms* (1929).

Quoting Zinsser, p. 143:

> Cultures should never be fished under the naked eye, no matter how far apart and discrete they may appear, since not infrequently close to the edge of or just beneath a larger colony there may be a minute colony of another species which may be too small to be visible to the naked eye, but which, nevertheless, if touched by accident will contaminate the subculture.
>
> For proper "fishing," the Petri plate with cover removed should be placed upon the stage of the microscope and examined with a low power objective, such as Leitz No. 2 or Zeiss AA. The sterilized platinum needle, held in the right hand, is then carefully directed into the line of focus of the lens, while the small finger of the hand is steadied upon the edge of the microscope stage. When the point of the needle is clearly visible through the microscope, it is gently depressed until it is seen to touch the colony and to carry away a portion of it. The needle is then withdrawn without again touching the nutrient medium or the edges of the glass or lens, and transferred to a tube of whatever medium is desired. In this way, individuals of one colony —descendants of a single bacterium of the original mixture—are carried over to the fresh medium.

FIGURE I—Fishing aerobic colonies with the Hardy-Beebe Binocular Loupe

This procedure is open to the objections that it unduly exposes the colonies to contamination from the air, and that it is difficult to guide the needle while looking through the compound microscope.

Dissecting microscopes, reading glasses, and engraver's monocles have been tried with indifferent success. For the last decade I have used a small Coddington lens (10x) for examining

and selecting colonies which were then picked with the naked eye, holding the dish slightly open for a moment in the left hand while manipulating the needle in the right. I believe this method is used widely, in spite of Zinsser's admonition to the contrary.

During the past year I have used the binocular Hardy-Beebe loupe [1] sold by the American Optical Company, with greatest satisfaction in picking colonies after they have been first inspected and selected by means of the hand lens. If such a loupe has ever been advocated for bacteriological work, I have been unable to find any reference to it in a careful search of the literature.

Its advantages are obvious. The milled adjustment of the width between the anterior lenses facilitates exact duplication of the binocular images. If one wears glasses he may have his own lenses inserted in the frames or the loupe may be worn over his own spectacles. The great advantage of switching instantly from the loupe to ordinary vision and back again, with the hands entirely free to manipulate plate or tube cultures and planting wires, must be experienced to be appreciated. The use of the loupe is illustrated herewith (Figure I).

In isolating aerobic bacteria, it is our practice to streak from liquid cultures or suspensions upon half the surface of prepared plain, blood, or eosin-methylene blue plates, leaving the other half untouched as a control upon the sterility of the medium. Confluent colonies generally appear upon that portion first streaked while well separated colonies usually appear near the center of the plate. These are fished under the loupe to the unused surface and after incubation examined microscopically for purity. This plan effects a great saving of culture media and time as compared with the commonly used method of plating out serial dilutions in agar.

The loupe is used similarly in the isolation of anaerobic bacteria grown as separate colonies in Burri tubes, from which the agar cylinders have been pushed out into sterile Petri dishes and sliced as described in a previous paper.[2]

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A RAPID METHOD OF TYPING PNEUMOCOCCI

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THE first requisite in the serum treatment of pneumonia is the determination of the type of the invading pneumococcus. The value of early administration of serum is one of the dominant factors being stressed today; hence it is all the more imperative that the particular type of pneumococcus should be determined at the earliest moment.

Neufeld demonstrated as early as 1902 that on mixing pneumococci and serum from animals previously inoculated with the homologous strain and examining microscopically, agglutination was seen to occur. Recently Sabin has made certain modifications of this procedure, so that a rapid and very reliable method is available.

The procedure is much as follows:

1. A representative sample of sputum should be obtained, if necessary, waiting until the patient expectorates material directly from the bronchial tract in-

stead of saliva or pharyngeal secretions. A surprisingly small amount of actual sputum is necessary. The sample should be obtained in a clean sterile container, free from any preservative.

2. Wash the sputum at least three times by swirling the mass of sputum around in sterile saline contained in three separate Petri dishes. This tends to remove extraneous microörganisms. Following this, the sputum is thoroughly emulsified in saline, and in order to facilitate this, a 5 c.c. syringe and a needle of large caliber are very useful. At least 1 c.c. of emulsified sputum is then injected intraperitoneally into a mouse, using a needle of small caliber. As a matter of routine, two mice are injected.

3. In 3 hours a peritoneal puncture is performed, using a capillary pipette made by drawing out a piece of small glass tubing in a flame. The finer the pipette, the more satisfactory it is for this purpose. Grasp the mouse by the loose skin of the neck between the thumb and index finger, with the back of the mouse across the palmar surface of the hand, and made secure by looping the tail between the ring and little fingers. The abdomen of the mouse being thus well exposed, the capillary pipette is passed into the peritoneal cavity, and by capillary traction fluid will be seen extending into the pipette. The pipette is then removed and the mouse is kept for further observation.

4. The surface of a well cleaned glass slide is divided into four sections, using a glass pencil. On each of these four sections is placed a small drop of the peritoneal exudate from the pipette. With the first of the four drops of peritoneal exudate is mixed a drop of saline which is then spread thinly and allowed to dry. To the second drop of the exudate, a drop of Type I agglutinating serum diluted 1 in 10 is added and the mixture is spread thinly and allowed to dry. Similarly, the third drop of exudate is mixed with a drop of Type II agglutinating serum, diluted 1 in 10, and is spread thinly and allowed to dry, and to the last drop of exudate a drop of Type III agglutinating serum, diluted 1 in 5, is added and the mixture is spread thinly and allowed to dry. The films are then fixed by passing the slide two or three times over a moderate flame. (For convenience one usually labels each of the above four sections as Sal., I, II, III with red pencil.)

5. The slide is then stained for 1 minute with basic fuchsin stain. The stain, which should be fresh, is made by adding 10 c.c. of a saturated alcoholic solution of basic fuchsin to 90 c.c. of distilled water, and filtering through paper. (The saturated alcoholic solution is made by adding 10 g. of basic fuchsin to 100 c.c. of absolute alcohol.) Other stains such as methyl violet may be used, but basic fuchsin has been found to be the most satisfactory. Wash off the stain gently with water, blot dry and examine under an oil immersion lens. The saline suspension is examined first and serves as a control. The character of the microörganisms is then determined. Frequently a pure culture of a lance-shaped diplococcus is found. The other sections are examined in sequence, and definite clumping of lance-shaped diplococci in one of the sections serves to denote the type. There may be many clumps consisting of only a few organisms or a few large clumps covering several microscopic fields. In examining for clumps one should not be misled by microörganisms, such as Gram-negative cocci, which tend to occur in clumps, or the grape-like clumps of staphylococci. These may be distinguished by being round or coccoid in shape in contrast to the lance-shaped diplococcus of pneumonia. The so-called capsule may be quite marked, especially in animal exudates such as obtained from the peritoneum of the mouse. Type III pneumococci usually

show very marked capsules, often so much so that the organisms themselves are seen with difficulty and the clumps are not usually packed so tightly together as are Type I or Type II organisms. Further, in a clump of Type III pneumococci one may see a very fine thread-like matrix extending from organism to organism.

Usually the sputum is well digested in the peritoneal cavity of the mouse within 3 hours, especially in Type III cases, but occasionally one may be required to repeat the peritoneal puncture after a lapse of 4 or even 6 hours in order to obtain a satisfactory result. In our experience a sputum in which a satisfactory typing was not obtained after 6 hours was either free of a fixed type of pneumococcus or contained some other organism such as a streptococcus.

6. The mouse almost invariably survives the peritoneal puncture, but, if the organism is virulent, the mouse dies in from 18 to 24 hours. The peritoneum is then opened under aseptic precautions and the contents are washed out with 3 to 4 c.c. of saline. The washings are centrifuged, first at very low speed in order to throw down any blood cells. The supernatant fluid is drawn off and centrifuged at high speed to throw down the microörganisms.

A "ring test" or precipitin test is performed by floating about 0.1 c.c. of the supernatant over an equal quantity of agglutinating serum, diluted 1 in 10. At the point of contact of serum and fluid a fluffy white ring appears almost immediately in the tube containing the serum of the corresponding type. The standard macroscopic agglutination test may be made with the centrifuged sediment. The latter two tests serve as a check on the rapid method, but in our experience the "ring test" is more readily and accurately interpreted. A broth culture may be made from the heart's blood of the mouse for purposes of further examination, and usually a pure culture of the pneumococcus is obtained from this source.

In a very early case of pneumonia, the first strain isolated may not be one of the fixed types so that it is often advisable to obtain another sample of sputum and repeat the search. In this way a Type I, II or III, which otherwise would have been missed, may be obtained.

We have found the rapid method of typing very satisfactory in the examination of spinal fluid, pleural exudate or blood cultures. Usually by proceeding directly with the material at hand instead of injecting a mouse, the type may be determined. If there are not sufficient organisms present, centrifuge the material and resuspend in a small amount of the supernatant. Failing either of these methods, one should inject the material into the peritoneal cavity of a mouse and proceed as with sputum.

VITAL STATISTICS

LOUIS I. DUBLIN, PH. D

Vital Statistics for Scotland—1930—According to provisional figures reported by the Registrar-General for Scotland, the birth rate in 1930 was 19.3 per 1,000, which is 0.3 more than that of the previous year, but 0.9 less than that of the preceding 5 years, and 2.9 less than that of the preceding 10 years. The marriage rate was 6.8 per 1,000, which is the same as that for the previous year, and 0.2 more than the average of the preceding 5 years. The death rate was 13.2, which is 1.3 below the rate for 1929, 0.3 lower than the average of the preceding 5 years, and 0.6 lower than that for the preceding 10 years. The infant mortality rate for 1930 was 83 per 1,000 births, which is 4 less than that of 1929 and 7 less than the average of the preceding 10 years.

The death rate from all forms of tuberculosis, the lowest rate yet recorded for tuberculosis in Scotland, was 88 per 100,000 in 1930. It is 6 less than that for 1929 and 22 below the average of the past 10 years. The death rate from respiratory tuberculosis also reached a new low level in 1930, being 62 per 100,000, which is 5 less than in 1929 and 14 below the average of the past 10 years. Deaths from cancer numbered 7,120, which number shows an increase of 271 above the average for the preceding 5 years, and 622 above that for the previous 10 years.—*Med. Off.*, 45: 120 (Mar. 14), 1931.

Increase in Lung Cancer in Hamburg, Germany—Reports from the St. George Hospital in Hamburg indicate that since 1924 there has been in that region a notable increase in the frequency of primary cancer of the lung. From 1911 to 1923, primary cancer of the lung constituted 0.36 per cent of all necropsies; during the 7-year period 1924 to 1930 the proportion rose to 1.06 per cent of all necropsies. The 50 to 60 and the 60 to 70 age groups were especially affected. The incidence among males is about three times as great as that among females. Among the causes of the increased incidence is the present higher average age of the population. More persons than formerly enter the cancer age. In addition to constitution, hereditary predisposition and trauma, chronic inflammatory irritants of all kinds may be incriminated, among which, besides influenza, may be mentioned especially the inspiration of dust and the exhaust gases of automobiles, more particularly of the heavy-oil motors.—*J. A. M. A.*, 96: 1328 (Apr. 18), 1931.

Public Health Progress in the Philippines during 1929—There seems to be some difficulty in the Philippine Islands in obtaining reliable health statistics, as the figures given in this article are all followed by the words "estimated" or "incomplete." The death rate for 1929 was 22.18, which is higher by 1.17 than the average rate for the past 5 years. The infant mortality rate was 165.03, against 154.02, the average for the past 5 years. The increase in the mortality was mostly from respiratory diseases, which were 5,118 in excess of the previous year: beriberi, diarrhea and enteritis, tuberculosis and dysentery also showed increases. There was a reduction in typhoid fever and

the mortality was the lowest recorded for this disease. Only 1 case of cholera occurred and it may therefore be said that the Philippine Islands have been free from outbreaks of cholera since 1926. Continuous anti-cholera vaccination of the masses is perhaps the factor most responsible for this satisfactory state of things. Only a few cases of smallpox occurred.

Vaccination is carried out very systematically and extensively, except in the non-Christian regions where great opposition by the natives is met with. Cerebrospinal meningitis never attained an epidemic character during the year: there were only 12 cases with 6 deaths from the disease in the City of Manila and 16 cases with 13 deaths in the provinces. As a number of Filipinos developed this disease on board ship on their way to Hawaii or the west coast of the United States special search was made for carriers among the general population and Filipinos going abroad. Only 0.9 per cent of over 10,000 examined were found positive. Tuberculosis caused over 30,000 deaths, equal to 12 per cent of the deaths. The mortality from malaria has been reduced to about a half of what it was in 1926. There were, at the end of 1929, 6,494 lepers under segregation and 1,321 new cases were isolated during the year. Patients are now presenting themselves for treatment in the early stages. Since 1922, 2,013 leprosy patients have been rendered negative and released. Prophylactic inoculations against smallpox, typhoid and paratyphoid, dysentery and cholera were performed as routine measures for the prevention of these diseases.—E. D. Aguilar, *J. Philippine Is. M. Dis.*, 10: 190–202, 1930. Abstr. by A. J. Collis, *Bull. Hyg.*, 6: 147–148 (Feb.), 1931.

Vital Statistics of Rio de Janeiro—During the year 1929, there were 8,830 marriages and 39,042 births (of which 36,188 were live births and 2,854 stillbirths) in the Federal District of Brazil. In the same year, 25,955 deaths occurred (that is, a coefficient of 15 per 1,000 of population). The stillborn rate, which was diminishing from 1920 to 1923, began to rise again from 1923 to 1929. The outgoing and incoming of persons to Rio de Janeiro gave a deficit of 26,109 inhabitants, which may be attributed to the presence of yellow fever at Rio de Janeiro. The population of the city was estimated in 1927 as 1,729,299 inhabitants, which number seems to be quite correct unless the next census proves the opposite. The Yellow Fever Commission listed 198,000 houses. Knowing the shortage of houses and that all of them are usually overcrowded, it may be considered as an average of 10 persons per house, which gives a total population of 1,980,000.—*J. A. M. A.*, 96: 1164 (Apr. 4), 1931.

Vital Statistics for Indiana in 1930—A preliminary report of the Vital Statistics Division of the State Board of Health in Indiana for the calendar year 1930 shows a decrease in deaths and in death rates from practically all communicable diseases. While the figures are subject to slight change, they are essentially accurate. The total number of births for 1930 was 58,971—a rate of 18.2, which represents a decrease of 0.2 below that of 1929 and 0.9 below that of 1928. The total deaths were 39,061—a rate of 12.1, which represents a decrease of 0.7 below that of 1929 and 1928.

The death rate for infants under 1 year of age was 57.7 for 1930, the lowest yet recorded for the state, and it shows a decrease of 5.9 below that of 1929 and 4.7 below that of 1928. Deaths of mothers from maternal causes show a rate of 5.5 as against 6.8 in 1929 and 6.0 in 1928. The death rates 65.9 for tuberculosis, 3.3 for typhoid

fever, 4.1 for diphtheria, 2.1 for scarlet fever, 1.8 for measles, 3.0 for whooping cough and 2.9 for puerperal septicemia are the lowest rates ever recorded in Indiana for these diseases.—*Month. Bull., Indiana State Board of Health,* 34: 201 (Jan.), 1931.

Fewer Women than Men in Japan—According to the general census taken October 1, 1930, and published by the government, December 8, the population of Japan proper is 64,447,724, comprising 32,388,369 males and 32,059,355 females, which is nearly double the population in 1872, 59 years ago. According to the Committee for the Investigation of Population and Food Problems, it is estimated that the population of Japan proper will grow to almost 90,340,000 in the next 30 years.

As to the population, it is strange to find that the number of males exceeds by 329,014 the number of females, 101 males to 100 females. Tokyo has the highest ratio of males to females, 111.9 to 100; next comes Hokkaido, 109.3; then Osaka, 108.9. In large cities and the mining and planting districts, the number of males is greater, while females are more numerous in places with many spinning factories. The smaller number of females is said to be due to the fact that many females die young. Dr. T. Nagai, specialist on problems of population, has published his opinion that Japanese mothers are apt to have another baby soon after they have lost their children.—*J. A. M. A.*, 96: 879 (Mar. 14), 1931.

Fatal Accidents in Old Age—The problem of fatal accidents is concentrated largely among children and old people. Two out of every 5 accidental deaths occur among those who are under 15 years or who have reached 65 years. Relatively few of these deaths are of occupational origin. They occur, almost entirely, in the home, on the streets or in other "public places"—among the old, mostly in the home.

Falls are by far the most important type of fatal accident among elderly persons. In fact, more old people lose their lives through falls than in all other forms of accident combined. The statistics for many years confirm this. They show, further, that falls cause about three times as many deaths every year as does the type of accident next in importance among old people, namely, automobile fatalities. Falls and automobile casualties combined cause every year more than two-thirds of all the fatal accidents among people who have passed age 65.

We may, therefore, discuss with profit the circumstances that underlie these two types of fatal accidents among old persons.

Fatal falls among the old occur, for the most part, in or about the home. About one-half of these fatalities are due to falling down stairs; and tripping over rugs or carpets, falling off or over chairs and falling in bathtubs are of no small importance. Such accidents, when they happen to younger persons, are not apt to terminate fatally; but in old age any sort of injury, including the shocks arising from fractures, dislocations, multiple contusions, or even lesser injuries, often hasten death, even if they are not primary causes.

What can be done to check the rising death rate from falls among elderly persons? It should be remembered that the elderly woman is a more frequent victim than the elderly man. Home safety, then, should be taught by women's organizations. This, in fact, is now being done by the General Federation of Women's Clubs in several states, notably, Illinois, Pennsylvania, and North Carolina.

The majority of the falls among both elderly men and women would never occur if a little more care and fore-

thought were exercised. Sane precautions are called for to see that homes are kept in such order as to minimize the danger of falls. Many fatal falls are traceable to poor illumination, loose, broken, or badly spaced treads, or to obstructions left on stairways. The combination of highly polished floors and small rugs is particularly dangerous.

One death out of every 7 in automobile accidents is that of an elderly person. This ratio bids fair to become higher. Automobile fatalities have become the foremost of all safety problems at all times of life, and much attention has been directed toward their control as they affect childhood. As a result we appear to have achieved a slight decrease in deaths among children. But (although little emphasis has ever been placed upon the fact) the actual death rate from automobile accidents is higher in old age than in childhood—and the increase is still going on.

There are other types of fatal accidents prominent in old age. More than one-fifth of the accidental asphyxiations by gas affect old people; one-eighth of the fatal burns; one-sixth of the accidents due to cutting and piercing instruments; one-fifth of those due to street-cars and horse-drawn vehicles; over one-fifth of the deaths due to injuries by animals; two-fifths of those caused by excessive cold; and one-quarter of those due to excessive heat.

On the other hand, it is relatively seldom that old people die of accidental poisoning by solid or liquid substances; very few are drowned, shoot themselves accidentally, or are killed by lightning. Among the deaths due to occupational hazards, such as mining, quarry or machinery accidents, elderly people seldom figure because few are exposed to these risks. Deaths in airplane and balloon accidents are almost nil.—*Stat. Bull.*, Met. Life Ins. Co., Mar., 1931.

PUBLIC HEALTH ENGINEERING

ARTHUR P. MILLER, C. E.

PROGRESS IN THE ENFORCEMENT OF THE NEW YORK STATE MILK CODE *

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IN New York the so-called "State Milk Code" constitutes Chapter III of the State Sanitary Code. It has the "effect of law" and is effective throughout the state excepting in New York City. It was first enacted in 1914 and was in general modeled after a code which had then been in effect in New York City for several years. The state code was generally revised in 1928 and the New York City Code a little later and, in the revision and following numerous conferences, the more essential requirements in the two were made practically uniform. In July, 1930, the state code was further amended, chiefly by the addition of more detailed and definite requirements relating to cream. The milk regulations are, therefore, uniform throughout the state, except for minor differences between the state and New York City Codes, and except as other cities, acting under authority given them by law, have enacted more stringent requirements, not inconsistent with those of the state code.

Substantial progress in milk control was made in the cities, and some, but decidedly less, in the villages and rural communities during the 14-year period following the enactment of the original code. The enforcement of the code is the responsibility of the health officer of each city, town or village. Practically all of the health officers in villages and towns were part-time officials with little if any training in milk control work and, except in a few instances, without expert assistance. It is not surprising that there should be considerable variation in the degree of enforcement in different places. There are, however, many instances in which health officers of smaller communities have made a hobby of milk control which has resulted in giving some of these small municipalities as good or better milk supplies than some of the larger cities.

For a period of nearly 2 years previous to the general revision of the code and before it became effective in 1928, a committee appointed by the public health council and headed by Dr. Paul B. Brooks, Deputy Commissioner, made an exhaustive study of milk control, and called into consultation health officials, milk producers, and milk distributors to determine the necessity for and practicability of the various requirements to be included in the code. An effort was made to eliminate provisions of the original code which had no marked public health significance. Before the code went into effect, an inten-

* Read at a Joint Session of the Public Health Engineering and the Food, Drugs and Nutrition Sections of the American Public Health Association at the Fifty-ninth Annual Meeting at Fort Worth, Tex., October 30, 1930.

sive educational campaign was carried on. Thousands of copies of the code were distributed and its provisions were discussed at numerous meetings attended by health officers, and milk producers and distributors.

An advisory committee made up of men representing the New York State Department of Agriculture and Markets, the State Agricultural College, the Geneva Experiment Station, large and small dealers and the producers, was appointed for the purposes of considering special problems that might arise as a result of the enforcement of the code and of promoting coöperation. This committee has been very helpful.

One of the important amendments of the milk code, made in 1928, provided for abandoning the old system of numerically scoring dairies in the grading of milk and basing grading chiefly upon bacterial examination of the milk. To make this provision effective, it became necessary to stimulate the development of laboratories in certain sections of the state. Through establishment of new laboratories or extension of the service of existing laboratories, laboratory facilities were made available to every health officer in the state. Taking advantage of a statute making this possible, the state has stimulated the development of county and municipal laboratories by paying half the cost of operating them when prescribed standards have been met.

Under another law, state aid is available to counties establishing county health departments and also to counties employing full-time county milk inspectors. This aid has contributed to improvement in milk control work, especially in the smaller communities in 7 counties. Four of these now have county health departments, 2 others have county milk inspectors, and another contracts with a commercial laboratory to do its milk laboratory and inspection work. Constant efforts are being made to encourage the development of additional county units and the employment of county milk inspectors. Progress along this line is expected.

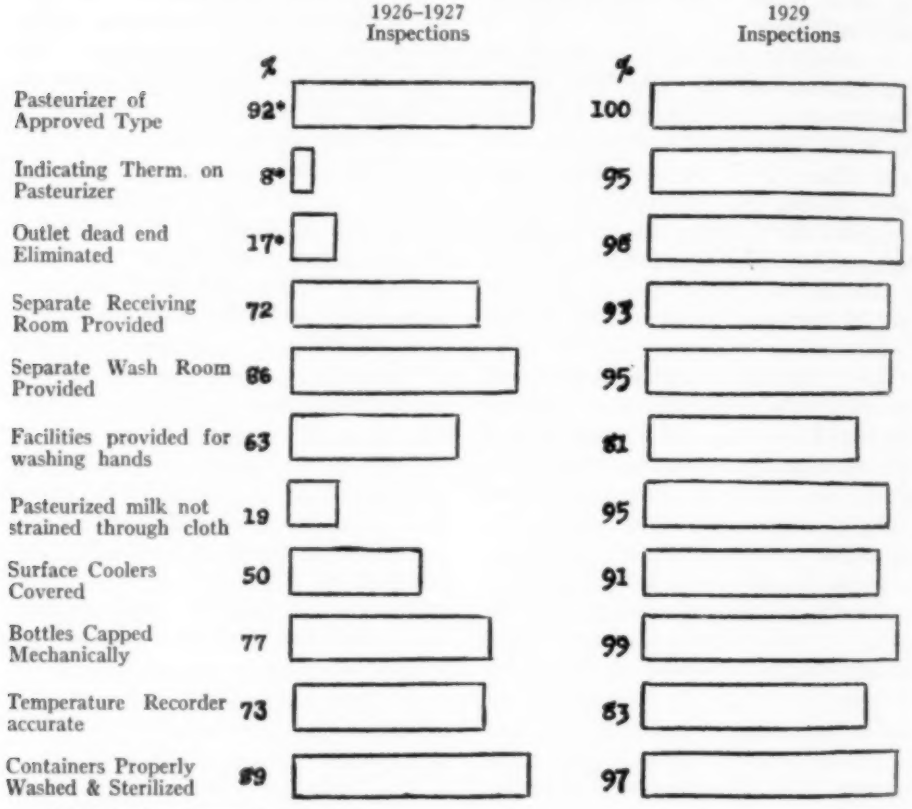
The code revisions effective in 1928 also included a general tightening up on the pasteurization requirements. The approval by the state commissioner of health of all pasteurizing apparatus as to type was required and also his approval in writing as to apparatus and efficiency of all plants producing pasteurized Grade A milk. Pasteurization was so defined as to require that *every particle* of milk be subjected to a temperature of 143° F. or more for not less than 30 minutes, whereas the original code required that milk be subjected to a temperature of 142 to 145° F. for not less than 30 minutes. A general revision was also made of pasteurizing plant regulations which are enacted by the commissioner as authorized by the code and are supplementary to the sanitary code.

Previous to 1928 the State Department of Health had had 2 men on milk control work attempting to cover an area of more than 47,000 square miles and the milk supply of more than 5 million people. Their efforts were necessarily limited. It was felt that the greatest good could be accomplished by devoting their time to inspecting pasteurizing plants and advising health officers as to their proper equipment, as to the efficiency of their operation and at the same time stimulating health officers to maintain standards and demand improvement.

Very soon after the revised code became effective, the milk control force was increased from 2 to 5 men. During the following year most pasteurizing plants were inspected twice instead of once and some that needed inspection most were visited three or four times during the year in order to secure the necessary improvements. In addition many tests of pasteurizers were made to

FIGURE I

STATUS OF NEW YORK STATE MILK PASTEURIZING PLANTS SHOWING PERCENTAGE COMPLIANCE WITH SANITARY REGULATIONS AT 280 PLANTS DURING 1926–1927 AND SAME PLANTS DURING 1929



* Not a legal requirement in 1926–27.

determine their efficiency. Continuous flow, in-the-bottle and pocket type pasteurizers were tested for temperature during the holding period by means of thermocouples and the holding periods were checked by timing or color tests. The results of this work were very gratifying. The accompanying chart (Figure I) shows a comparison of the percentage of compliance with some of the more important regulations just before the amendments went into effect and after they had been in effect about a year.

All pasteurizing equipment which could not be satisfactorily remodeled is reported as of unapproved type. The 22 plants having such apparatus all installed new pasteurizers of satisfactory type. The equipment of pasteurizers with indicating thermometers was a new requirement and almost complete compliance was promptly secured. The 5 per cent non-compliance represents for the most part plants that had secured indicating thermometers which were found broken upon later inspection. These were promptly replaced with new thermometers. Pasteurizers which formerly had outlet dead ends were either replaced with new equipment or, where practicable, satisfactory flush or

close coupled leak protector outlet valves with sterilizing connections were installed. Leaking inlet valves were replaced by leak protector valves. As indicated by Figure I, other important improvements were made.

One very gratifying result of this work has been the increase in the consumption of pasteurized milk in the state. Between January 1, 1928, and January 1, 1929, the number of pasteurizing plants under our inspection increased from 518 to 646. This increase in the number of pasteurizing plants and a general increase in the amount of pasteurized milk sold by other plants gave a small but marked increase in the percentage of pasteurized milk consumed. We believe that to increase the proportion of properly pasteurized milk consumed as compared with raw milk is one of the most important accomplishments of any milk control program from the public health standpoint.

In addition to the progress made in increasing the efficiency of pasteurization and the use of pasteurized milk, material progress has been made in improving the quality of raw milk. The amended regulations eliminated Grade C milk and made Grade B raw milk a temporary grade which could be sold only in the interval between making official application for a tuberculin test and obtaining the test. Fixing the maximum bacteria count of raw milk at 30,000 and at the same time requiring that bacteria counts be made the basis for grading have materially improved the quality of raw milk.

A thorough investigation of certified milk production was also made last year. This survey showed that certified milk producers generally were making an honest effort to meet requirements. County Medical Milk Commissions formerly were not under health department supervision and many commissions were found to be very lax in the performance of their duties. The amended New York State Code requires that each county medical milk commission shall make a monthly report upon its activities to the state department of health. The department has insisted that these reports be submitted regularly for checking so that there is assurance that important safeguards such as veterinary examination of cows, tuberculin tests and medical examination of milk handlers are being applied.

A conference between the Governor's Agricultural Advisory Committee, the State Department of Health, health officials of various communities throughout the state, and representatives of the milk producers and distributors was held early this year to discuss milk control. As a result a law was passed specifically charging the state commissioner of health with the duty of protecting and promoting the health and welfare of the people of New York State by inspecting, regulating and supervising the sanitary quality of milk and cream distributed, consumed or sold within the state, whether produced within or without the state. This law also provided funds for adding 11 milk control specialists to the department staff and for purchasing and equipping two mobile milk laboratories in addition to other necessary equipment. This law specifically provided that the department

> . . . make a complete investigation, study and survey within and without the state, to determine, among other things, the following: (a) the present sources of supply of milk and cream for household consumption and for manufacturing purposes and the amount produced by such sources; (b) the adequacy of existing state and municipal machinery for the enforcement of sanitary regulations and the extent to which impurities have escaped detection and prevention; (c) the proper state or local agencies or combination of agencies to be entrusted with the duties and responsibilities of effective sanitary control and inspection of milk and cream in their various local and state-wide phases; (d) the probable cost to the state of adequately enforcing the rules

and regulations of the commissioner and the public health council; and (e) such other information relative or pertinent to the functions of such Bureau [of Milk Sanitation] as the commissioner may request.

The public health council, which is the body charged with enacting the provisions of the sanitary code, enacted further amendments to the code this year as indicated hereinbefore. These amendments were designed to raise further the standards of milk and cream in so far as the experience of the past 2 years indicated that it was practicable to do so, and completely revised the cream regulations providing for the grading thereof. The regulation covering the sale of milk and cream shipped into New York State was also revised to make it necessary to produce and handle such milk or cream in conformity to the requirements of the New York State milk code and to subject it to the same standards of supervision and inspection as are required for milk or cream produced within the state.

Among the regulations which were increased in stringency is one requiring that health officers may not issue permits for the sale of pasteurized milk or cream until

. . . officially notified that the plant in which such milk or cream is pasteurized has been inspected as to apparatus, sanitary conditions and efficiency of operation by an authorized representative of the State Department of Health and that in these respects at the time of inspection the conditions found were such as to warrant issuance of a permit.

A new regulation relating to mastitis was inserted in the milk code providing that producers immediately report inflamed conditions of the udders or teats of cows and exclude the milk from such cows. These regulations were enacted May 19, 1930, and became effective July 1, 1930.

Considerable time has been consumed in organizing the new staff and in securing and equipping the two mobile laboratories. This work has, however, now been completed and the laboratories are in operation in the field surveying the milk supply of the state. The schedule under which they are working will make it possible to cover the state by the middle of December, 1930.

In summarizing the progress made in the enforcement of the New York State milk code, we can say (1) that marked improvement has been made in milk control in most New York State cities; (2) that the employment of county milk inspectors is being stimulated by offering state aid and is tending to materially improve enforcement work in the smaller communities; (3) that grading of milk chiefly on the basis of bacteria counts has done much to increase the quality of the raw milk supply; (4) that the checking of monthly reports of county medical milk commissions has improved the status of certified milk; (5) that the improvements made in pasteurizing plant equipment and in methods of operation taken together with the increase in the consumption of pasteurized milk represent valuable public health protection; and (6) that the increase in the state appropriation for milk control work has made it possible to devote more attention to the work of advising, supervising and stimulating the milk enforcement work of local health officials, which should mean still more progress in the near future.

INDUSTRIAL HYGIENE

EMERY R. HAYHURST, M. D., PH. D., AND LEONARD GREENBURG, M. D., PH. D.

Carbon Monoxide Poisoning in Industry—Winslow takes the position that carbon monoxide ranks first, and lead second, among the industrial poisons. The Bureau of Industrial Hygiene, in this study, has directed its attention primarily to the effects of prolonged exposure to relatively low concentration of the gas rather than to acute asphyxia. The examination of a representative number of workers constantly exposed and a review of the voluminous literature of the subject constitute the main purposes of the present investigation.

In connection with carbon monoxide poisoning, the physiology, pathology, symptoms, diagnosis, and prognosis, comprise Part I with a discussion of 80 pages, including several tables. The carbon monoxide hazards in industry comprise Part II, which discusses sources, control of the use of gas heated appliances, the operation of the internal combustion engine, and the matter of compensation (some 60 pages). Part III, entitled "Medical Control of the Carbon Monoxide Hazard," is concerned with the physical examination of 50 garage workers, the medical supervision of workers, and the treatment of acute cases of carbon monoxide asphyxia (about 55 pages). There follows a valuable Appendix in which the methods for the detection of carbon monoxide in the air and in the blood, the gas masks, and forms for recording histories and examinations, are delineated. There is a Bibliography of 182 grouped references, of which 139 are upon carbon monoxide and the balance upon ozone. Some 26 tables, 8 charts, and 29 illustrations accompany.

Of value, particularly, is the discussion on exposure to low concentrations of the gas over considerable periods of time, as well as case histories and the control of the hazards in industrial process. Compensation procedure is illustrated by case citations and a classification of different forms of death claims. Table XIV, which is an infold, groups the symptoms, physical findings, and blood findings of 50 garage workers. The illustrations are of a rather new type in connection with the descriptions of carbon monoxide poisoning and of distinct educational value.—May R. Mayers, M.D., Bureau of Industrial Hygiene, New York State Department of Labor, *Special Bull.*, 1930, 243 pp.

E. R. H.

Claims Filed for Occupational Diseases, Ohio, 1927–1929—In 37 pages of tables are given the experiences of the Industrial Commission of Ohio with regard to occupational disease claims and their compensations during the 3-year period, 1927–1929. The tables are classified by industry, by types of diseases, by days lost, by compensation cost, by medical cost, with a separate grouping for claims disallowed with the nature of the diseases concerned.

There was a total of 3,229 claims filed, of which 561 were found non-compensable. The total includes 70 fatal claims, of which 52 were non-compensable, leaving 18 claims which were considered compensable. Of these, 15 were

due to lead poisoning, 1 to brass or zinc, 1 to benzol, and 1 to petroleum products. Diseases of the skin recorded 2,060 cases, of which 6 were cancerous, due to pitch or tarry compounds. In only 793 of the skin diseases was there a disability of more than 7 days, i.e., 61 per cent had no compensable disability. The total number of days lost because of skin diseases was 39,020.

There were 89 claims for compressed air illness, most of them filed for medical treatment of painful conditions such as "blocked ears," painful teeth and neuralgia rather than real compressed air illness.

There were 450 claims for mineral poisonings, of which 441, including 15 fatal claims, were attributed to lead poisoning; the balance to brass or zinc. In 391 claims for lead poisoning, there was a loss of over 7 days, while in 35 it was 7 days or less. This would indicate that in one out of 12 claims there was a loss of less than 7 days, but if the loss was more than 7 days, the average period of disability was found to be about 87 days per case. The total number of days lost for the 441 lead poisoning cases was 124,196. From the standpoint of time lost, lead poisoning is the most serious of the occupational diseases encountered.

On July 21, 1929, tenosynovitis and prepatellar bursitis were added to the list of compensable occupational diseases, and since that time 26 cases were filed and found compensable, 12 for the former and 14 for the latter affliction. The total number of days lost was 671 and the compensation cost for the 26 claims was $1,381.

Of the 561 claims which were filed for conditions not compensable under the Occupational Disease Law, 61 were for tuberculosis, 15 for asthma, 33 bronchitis, 52 for various poisonings, such as carbon monoxide, cyanide, chromium, etc., 44 for various infectious or contagious diseases, including scarlet fever, syphilis, pneumonia and various bacterial and parasitic diseases; 148 for various inflammatory conditions of different parts of the body; 25 for neuritis, 8 for circulatory diseases involving the heart and arterial system; while 52 death claims were included in this group of non-compensable claims.

The table on costs shows a total compensation cost of $278,515, or an average of $104 for each compensable claim including the 18 death claims. The total medical cost is $87,614, or an average of $32 for each compensable claim.—

—Industrial Commission of Ohio, *Special Bull., No. 2:* 42–81, 1931. E. R. H.

Deep Mine Ventilation—There is a limit to acclimatization in moist temperatures which the writer, in his own case, some years ago, determined to be in a vicinity of 88° F. wet bulb. Beyond that the body temperature begins to rise continuously though slowly. In addition to the rise of body temperature, men in very hot places also suffer from what is really poisoning by water. During sweating the body is constantly losing salt as well as water, since the sweat contains about ¼ per cent of salt. A sufficient supply of salt, therefore, in either the food or drinking water, prevents ensuing trouble. About ¼ per cent of salt should be added to drinking water.

It is probable that the silicosis risk in dry air could be avoided if there were added to the quartzite dust another kind of dust with the property of rendering the silica harmless. Thus in British coal mines, the stone dust, which is either present naturally or is added in order to prevent explosions, does not produce miners' phthisis, though it contains about 35 per cent of quartz and nearly 60 per cent of total silica. The cost of dusting would probably be small in relation to diminished costs in other directions. One of the advantages is the abolition of risk of hookworm infection, and another, the very low death rate from tuberculosis (as experienced in British coal mines).

The next paper by the same author,

on "The Avoidance of Silicosis with Dry Methods of Working," points out that in the Rand mines keeping everything wet has not been an advantage so far as tuberculous infections occur, and that there is at present every reason for concluding that the dust danger in the mines could be overcome by the use of dry methods. This is especially so in face of the constantly increasing temperature encountered as the shafts reach lower levels.—J. S. Haldane, *Journal*, Chemical, Metallurgical and Mining Society of South Africa, 30, 2: 51–58 (Aug.), 1929. E. R. H.

A Study of Ventilation and Respiratory Illness in New York Schools; Comparison of Window-Gravity Ventilation and of Unit Fan Ventilation with Varying Air Flow—As in our Syracuse studies (Contributions Nos. 2 and 3) it appears that when school populations are balanced as to age, sex and nationality stock, and when the personal equation of the observer is held balanced, concordant and consistent results may be obtained from a study of school absenteeism and of respiratory illness among pupils in attendance.

A study of the health of pupils in schoolrooms ventilated by unit ventilators shows that reducing the rate of air flow from the standard figure of 30 cu. ft. per pupil per minute to approximately one-half that amount was not attended by any harmful effects so far as could be observed. In our experience the teachers preferred the rooms with low air flow on account of freedom from drafts and the lessened noise of the unit motors.

A comparison of schoolrooms ventilated with unit ventilators and of those ventilated by window-inlets with gravity exhaust shows that the simpler gravity process is quite as satisfactory from the health standpoint as is the system involving the use of fans.—Rufus Cole, D. D. Kimball, F. S. Lee, G. T. Palmer, E. B. Phelps, E. L. Thorndike, and C.-E. A. Winslow (Chairman), *Am. J. Hyg.*, XIII, 1: 235–255 (Jan.), 1931. E. R. H.

Heat Injuries Among Native Miners in the Witwatersrand Gold Mines—The critical heat point for man lies at an air temperature of about 90° F. wet bulb in the absence of appreciable air movement. In many of the deeper workings of the mines, men are exposed at air temperatures even beyond the critical point. Thus at a depth of 8,010 ft. the rock temperature was recorded at 101.2° F., the dry bulb, 94.2° at the drive face with machines working, and a relative humidity of 90 per cent, while at the top section of working stopes the dry bulb reached 96.2° and the relative humidity 95 per cent. With some 10,000 men, more or less, exposed to these conditions, there occurred, in 12 months, 12 cases definitely diagnosed as heat strokes of whom 6 died.

The principal symptoms exhibited by the victims were: Temperature 102° to 107°, axillary, but it is noteworthy that a few cases had a temperature of only 99° to 102°. Pulse 100–120. Dyspnea. Dry "burning" skin. Unconsciousness. Sometimes delirium and great violence were exhibited; one case was stated to require seven men to restrain him. Convulsions were present in most cases; in one there was a spasm similar to that seen in hydrophobia, so that he was unable to swallow. This is the nearest approach to "heat-cramp" of which I have a trustworthy record.

The majority of cases of severe stroke occurred in new workers. After the first week or two, gradual acclimatization takes place. Post-mortem, the striking lesions observed were edema of the lungs and brain, with acute congestion of these organs.

In the discussion, Dr. Hans Pirow, Government Mining Engineer, pointed out that the native laborer serves for a very short period and is then replaced

by another, so that in any one month they may deal with 10,000 or more new recruits, and the whole native labor complement is changed within a period of some 18 months. The question naturally rises whether the same standards of comfort are applicable to different types or races of natives. (A considerable important discussion follows, particularly in regard to advisability of decreasing wet methods and adopting Dr. Haldane's idea of dry methods through the mixing with the silicious dust of some harmless dust, since the wet methods now after a considerable number of years have not succeeded in eliminating miners' phthisis. At the Mysore mine, this result was alleged to have been attained, and he thought the method worthy of further trial.)—A. J. Orenstein, M.D., *Journal,* Chemical, Metallurgical and Mining Society of South Africa, 30, 2: 66–74 (Aug.), 1929. E. R. H.

Miners' Phthisis on the Rand—(We abstract only a couple of features from this valuable article.) The "New Rand Miners," meaning those especially selected since 1916, now number 8,300 and are increasing each year. The attack rate for silicosis among all miners who were working in their 10th year of service was 5 per cent, while among the New Rand Miners it was only 1.3 per cent.

It takes nowadays, on the average, over 12 years' underground work to produce a case of silicosis. Of the 270 cases detected during the past official year, 90 per cent had begun work prior to August, 1916—prior, that is, to the beginning of the present-day period.

While it is felt that a big corner has been turned in the matter of silicosis, it is not anticipated that the actual number of cases detected will show significant further decrease in the immediate future. After years of hard work on the part of mining engineers and inspectors and mine officials and medical men, a large measure of success has been attained. But it is incomplete. When, in 1916, it was found that the liberal use of water would reduce the dust from drilling or blasting by as much as 98 per cent by weight, the problem appeared to have been solved. It was only solved *so far*. Have we not been overdoing water? Could we not do better with less water and a greater extension of alternative methods? (The dry dusting method of Dr. J. S. Haldane is then referred to.)—L. G. Irvine, M.D., and A. Mavrogordato, M.D., *Journal,* Chemical, Metallurgical and Mining Society of South Africa, 30, 2: 163–168 (Nov.), 1929. E. R. H.

Foundry Ventilation—The rules of the New York Industrial Code as enforced by the Department of Labor for the removal of smoke, steam, gases and dust, and for coremaking rooms in which women are employed, are reprinted, discussed, and methods of compliance illustrated.—John H. Vogt, *Indust. Hyg. Bull.,* New York State Department of Labor, 7, 9 and 10 (Mar. and Apr.), 33–34, 37–39, 1931. E. R. H.

Compounding Materials Used in the Rubber Industry (Classification and Health Hazards)—The various substances used as accelerators, antioxidants, and dry organic compounds, are grouped as to toxic or irritant properties, and then arranged in alphabetical order and discussed. Special references are made to other Safe and Health Practices Pamphlets.—National Safety Council, *Indust. Safety Series* No. Ru. 1, 1931, pp. 16. E. R. H.

Benzol—The purpose of this pamphlet is to describe the principles used to protect the health of workers exposed to benzol. There are two distinct types of uses recognized, (1) that in closed systems of pipes or tanks, and

(2) in open processes. Benzol poisoning is briefly discussed as acute or chronic poisoning, with the most important diagnostic signs, also steps in medical supervision. Exhaust ventilation is discussed with diagrams and illustrations, while an Appendix is devoted to fire and explosion hazards.—National Safety Council, *Health Practices Pamphlet*, No. 14, 7, 1931.

E. R. H.

The Effect of Prolonged Exposure of the Siliceous Spicules of a Fresh-Water Sponge (Spongilla Fragilis) to the Action of Animal Tissues: A Contribution to the Pathogenesis of Silicosis in Man—The spicules of the fresh water sponge, *Spongilla fragilis*, are composed of opal, a form of hydrated silica, which is similar to quartz in its chemical reactions. These spicules, when introduced into the tissues of animals, are slowly but definitely dissolved, proving conclusively that silica is soluble in the tissue fluids of animals, and presumably of man. This confirms the assumption held by many students of silicosis that particles of siliceous material are gradually converted into the colloidal state and as such exert a fibroplastic influence on the lungs of miners and other exposed industrial workers. Definite fibrosis of the lung of a dog into which the spicules had been introduced suggests that there is a concomitant injury attributable to the disappearance by solution of the siliceous elements of the spicules.—Ralph G. Mills, *Am. J. Hyg.*, XIII, 1: 224–233 (Jan.), 1931.

E. R. H.

Ultra-Violet Radiation and Resistance to Infection: Intranasal Infection with the Pneumococcus and with Bacterium Lepisepticum in the Rabbit—Three experiments with exposure to direct sun or north skylight through vitaglass showed that both the percentage of infection and the morbidity rate after inoculation with pneumococcus type I was higher in the irradiated animals than in the control group kept inside.

Similar experiments performed with mercury arc radiation and infection with *Bact. lepisepticum* showed that radiation had no effect on the susceptibility to infection, although the mortality rate was somewhat lower in the irradiated group.

A variation in the amount of ultraviolet, from a marginal erythema to a heavy but subulcerating dose, had no correlation with resistance to the respiratory infections used.—Mary Hardy and Jeannette Chapman, *Am. J. Hyg.*, XIII, 1: 255–280 (Jan.), 1931.

E. R. H.

Laboratory Aids in the Diagnosis of Lead Poisoning—Summary—

1. Laboratory methods for diagnosis in lead poisoning are valuable in any case, essential in the majority. They are not in themselves diagnostic but complementary to clinical examination including history.

2. In every case blood examination, including hemoglobin estimation, red blood count and examination of the stained smear, should be carried out.

3. Quantitative estimations of lead in the urine should be routine practice.

4. Public institutions such as public health laboratories should be in a position to make these estimations for the general practitioner.

5. In industrial work periodic examination of blood smears stained to demonstrate stippling in the red cells is a convenient and efficient method of checking exposed workers and, with practice, assists the industrial physician to place his staff of workers so as to avoid the more severe manifestations of lead poisoning among them.

—A. R. Riddell, *Canad. Pub. Health J.*, 22, 3: 138–142 (Mar.), 1931.

E. R. H.

FOOD, DRUGS AND NUTRITION

WALTER S. FRISBIE

The Effect of Heat upon the Biological Value of Cereal Proteins and Casein—The first experiments by the authors were made upon certain prepared breakfast cereals. Rats 21 to 28 days old and weighing 35 to 60 gm. were used as test animals. Wheat, rice, and corn were tested alone and supplemented by small amounts of casein.

White bread was compared with the same toasted in ¼″ slices at 150° F. and bread crust similarly compared with the corresponding crumb. In each case, the toasted product caused less total growth and less growth per gm. of protein eaten. When 5 per cent of raw casein was added the discrepancy caused by the heat treatment largely disappeared.

Puffed wheat produced but little growth. Cracked wheat was then fed raw, toasted, and water-cooked. The growth value of the water-cooked was better than that of the raw, and both were greater than that of the toasted. Caramel formation during toasting was found to account for only a small part of the injury.

Raw cracked rice provided excellent growth but puffed rice gave far less growth.

Raw ground yellow corn gave less growth than did wheat, and toasted corn flakes gave less growth than raw corn.

When young rats were fed diets containing raw and toasted wheat gluten as source of protein at 9, 12, 15, 18, 21, and 24 per cent levels in a diet otherwise adequate, the growth in 56 days was found to be 1.29 to 1.40 per cent per gm. of protein eaten in the case of raw gluten at all levels up to 18 per cent, and to fall to 1.15 and 0.98 at the 21 and 24 per cent levels. The corresponding figures for toasted gluten were 0.94 to 1.09 and 1.12 and 0.86. The maximum growth rate on both raw and toasted diets was at the 18 per cent level, but the toasted gluten supported less growth than the raw both absolutely and relatively to the amount eaten at all levels.

When large mature rats were used for a similar study of raw and toasted wheat gluten at a 6 per cent level, the values found were 83 and 64 and in another test with raw and toasted casein at an 8 per cent level the biological values found were 66 and 53.

The digestibility of the toasted proteins was but little different from that of the raw, particularly in the older animals, and the unexplainable loss of nitrogen occurred chiefly in the urine, indicating that the change produced by the heat treatment lies probably in the assortment or availability of the amino acids absorbed.—Agnes Fay Morgan, *J. Biol. Chem.*, 90: 771 (Mar.), 1931.

Magnesium Starvation — Magnesium is present in many chemicals and in some drugs and is a necessary part of the normal diet, but how necessary it is and why has only recently been discovered by Drs. McCollum and Orent and reported by them at the Montreal meeting of the American Society of Biological Chemists. These doctors found that 11 days of a diet wholly lacking in magnesium caused convulsions and death in the majority of rats. On the 3d day of the magnesium-free diet the rats developed bright red ears and tails. On about the 10th day and never later than the 11th day the animals behaved

strangely. Slight noises agitated the rats so greatly that they whirled around two or three times and collapsed. Their breathing was disturbed, their eyes protruded and the blood rushed away from the vessels just under the skin so that the ears and tails were blanched. Eighty-five per cent of the rats died in the spasm, the remaining 15 per cent living on indefinitely, some as long as 90 days. When magnesium is omitted from the diet, calcium and phosphorus are drained out of the body so that not enough is left to make an X-ray of the skeleton. Dr. McCollum believes that this is explained by the fact that there is much the same relation between the adrenal glands and magnesium as there is between the thyroid gland and iodine or the parathyroid glands and calcium. —*Science*, 73, 1894 (Apr. 17), 1931, *Science News*, p. 10.

The Association of Vitamin A with Greenness in Plant Tissue. III. Vitamin A Content of Asparagus Grown under Light of Various Qualities—In two former reports (Abstract, *A. J. P. H.*, Nov., 1927, and May, 1929) the authors submitted data leading to the conclusion that there is a relationship existing between the vitamin A content of plant tissues (lettuce and asparagus) and their degree of greenness.

The experiment reported here gives added support to the belief that in some manner or other the elaboration of vitamin A in the plant is connected with the development of the chlorophyll pigment.

Asparagus was chosen as the test plant. Twelve light filters were set in three frames and placed over the plants. A fourth frame was covered with Vita glass.

The laboratory procedure was practically the same as that of previous experiments. Albino rats were placed on a vitamin A-free ration, and when depleted of this vitamin were fed asparagus taken from the region just below the terminal bud of the stalk. Growth was determined over a period of 8 weeks. This was in the 1929 season. Since the supply of tips was too limited to be used for other purposes the frames were set up again in 1930 and the tips used for determination of chlorophyll, amino acids, water-soluble nitrogen, and inorganic elements.

From the data on the chemical composition of the tips and the gains of rats in this experiment, it seems reasonable to conclude that within the restriction of the two variables expressed by some non-linear relationship chlorophyll content is a limiting factor on vitamin A synthesis in the vegetative parts of the plant. This gives point to the contention of a previous investigator (*Science*, 68, 48, 1928) that further progress in a knowledge of vitamin A may depend upon the industry and the success of the biochemists and the plant physiologists in the efforts to solve mysteries of chlorophyll and its functions.—John W. Crist and Marie Dye, *J. Biol. Chem.*, 91: 127 (Apr.), 1931.

The Use of Cottonseed Meal in the Diet of the Rat—These experiments were undertaken to establish evidence for the contention that cottonseed meal contains physiologically active gossypol in amounts sufficient to influence the growth and well-being of rats.

In these controlled feeding experiments, advantage was taken of the previously acquired information that iron salts are efficacious against gossypol injury and that gossypol is destroyed when heated to high temperatures in the autoclave.

The basic diet, containing cottonseed meal to which different amounts of iron salt were added, consisted of cottonseed meal (standard or autoclaved), yellow corn, wheat, alfalfa, NaCl, and $CaCO_3$.

A table gives the gain during successive 30-day intervals of rats on cottonseed meal diets supplemented with

iron. During the first 60 days all animals made normal gains but during the last 60 days of the experiment the rats receiving the standard meal without the iron additions almost invariably made smaller gains than the rats receiving the autoclaved meal. Marked improvement in growth resulted from the addition of iron (1 to 2 per cent of ferrous sulphate) to the standard meal.

At the close of the experiment the unhealthy condition of rats on the standard meal was very noticeable. At times the animals became extremely nervous or excited and breathed rapidly. The female rats appeared more susceptible to injury than the males.

Improvement in the growth and well-being of animals fed upon cottonseed meal diets was brought about in two ways: first, by administering inorganic iron, and, second, by replacing the ordinary meal in the diet with an autoclaved product which contains little, if any, active gossypol.—Willis D. Gallup, *J. Biol. Chem.*, 91: 387 (Apr.), 1931.

The Induction of Tetany in Rachitic Rats by Means of a Normal Diet—For many years the common method of inducing experimental tetany has been the removal of the parathyroid glands following which the calcium concentrate of the blood falls and the animal develops convulsions.

Another method is the feeding of large amounts of phosphates. Neither of these is satisfactory since they do not resemble clinical tetany. The most common form of tetany is that which occurs in infants and an attempt was made by the authors to induce tetany in rachitic animals by means of a ration which approximated as nearly as possible the normal dietary of the infant.

Detailed descriptions and tables are given as to the experiments carried out. It was found that tetany can be induced in rachitic rats simply by an abrupt change from a rickets producing ration, high in calcium and low in phosphorus, to a normal ration of dried milk or of dried milk and whole wheat. The fall in calcium in the serum which is brought about by this means develops within 48 hours but is maintained for only a few days. This reaction is not due to an absolute nor to a relative increase of phosphorus in the dietary but to a sudden shift in the Ca:P ratio in the subsequent diet as compared to the preliminary diet. When this ratio of Ca:P is decreased from about 4:1 to 1, or 1.5:1, tetany ensues, whereas if it is decreased only to about 2:1 the fall in calcium and nervous symptoms do not come about.

Attention should be directed to the effect of marked alterations in the constitution of dietaries, as such shifts may help to explain nutritional disturbances which are not explained from the standpoint of adequacy.—Alfred F. Hess, Mildred Weinstock, H. R. Benjamin, and J. Gross, *J. Biol. Chem.*, 90: 737 (Mar.), 1931.

CHILD HYGIENE

RICHARD A. BOLT, M. D., DR. P. H.

PREVENTIVE DENTISTRY

A PROFOUND change is taking place in what was formerly considered preventive dentistry and mouth hygiene. In the past we have been occupied largely with the exploration of children's teeth—mainly during the school years—and the recording of numerous defects. An intensive program of pulling and patching was instituted and the children were instructed by tooth brush drills to believe that "a clean tooth never decays." Year after year this program was continued, and year after year we found about the same number of children entering our schools with defective teeth. The disturbing feature of this situation is that in a considerable percentage of these school entrants the first permanent molars have decayed beyond repair. This, as we know, may lead to various forms of malocclusion and systemic disorders.

So long as dentistry proceeded upon the theory that there was plenty of work for the dentist if he confined his practice to older children and adults, little progress in preventive dentistry could be expected. Fortunately the profession had a number of men, imbued with the research spirit, who were venturesome enough to attack the problems of the preschool child from all sides and even to peer into the mysteries of the prenatal period. From a knowledge of the embryonic growth and development of the jaws the first hints as to a more rational method of attack on problems connected with dental structure arose. This pioneer work in dental histology and pathology opened the way to clearing up many hitherto obscure points. But the greatest progress in clearly understanding the processes of growth and decay of the teeth has come in the last 10 years. During that time painstaking researches in the relation of nutrition to the teeth have been made. This work has been so carefully developed, and the check of one investigator upon another has been so thorough, that we may now point with a definite degree of assurance to the rôle of diet in preventive dentistry.

A painstaking review[1] of this subject, which it would profit every health worker to read carefully, appeared in the early part of this year. In this editorial review Dr. Hanke begins by pointing out that dental caries, pyorrhea alveolaris, and inflammation of the soft oral tissues have been known from the dawn of history and that man has held all sorts of theories concerning their causes. Man has also resorted to many fads and fancies to prevent and cure dental disease. In this article Dr. Hanke attempts to dispel present-day popular misconceptions. In summing up the evidence from antiquity he says:

> These studies of the conditions that existed in ancient Egypt are instructive because they show that:
>
> 1. The mastication of coarse food does not prevent dental caries, suppurative periodontitis, nor pyorrhea; but it does wear down the teeth.
>
> 2. Unrefined grain does not contain mysterious substances that prevent dental disorders.
>
> 3. These dental diseases were associated with a diet that was predominantly carbohydrate, and was probably markedly deficient in vitamin C, and that was not necessarily inadequate in vitamin D.
>
> 4. Dental diseases are certainly not the outcome of modern civilization. (Although dietary deficiencies in the modern diet may be one of the factors, if not the main factor in dental decay as we see it today.)

It is pointed out clearly that "the changes observed in the teeth, the supporting structures, and the gingival tissue are considered to be metabolic in origin and not due to some local disturbance." It this is the case, as many investigators now believe, then the task of preventive dentistry is so to order the dietary of the pregnant woman and the infant as to make possible the proper growth and calcification of the teeth. Milk, green leafy vegetables and citrous fruits should be basic items, therefore, of the diet given the prospective mother.

Dr. Hanke also states that "poorly constructed teeth, delayed and irregular dentition, and slow development of the jaw bones frequently occur in children that have rickets." This lack of development, of course, predisposes the dental structures to disease. Experimental work with rats and dogs has made it possible to reveal some of the abnormal processes in tooth structure and shows that hypoplasia of the teeth leads to early decay in many instances. After a review of the work relating to scurvy, Dr. Hanke is convinced that

> These considerations justify the conclusion that a deficiency in vitamin C may be a very important factor in producing pathological changes in the pulp, in the periodontal tissue and in the gingival tissue. This immediately throws a new light upon dental diseases and releases us from the shackles of the rather hopeless outlook that dental caries is a purely chemical process occasioned by the products of bacterial fermentation and that spongy gingival tissue and pyorrhea are due primarily to the ravages of bacteria that can hardly be removed from the mouth. It lays stress upon the metabolism of body cells. If we can produce healthy cells by proper nourishment, we can often eliminate the bacteria from the infected areas and keep them outside of the confines of the tissue.

While this last statement may lean toward too much optimism, it certainly makes the assumption that diet is a primary factor in dental hygiene appear worthy of following.

The most helpful suggestions arise from the recent works of Sherman Davis; Boyd, Drain, and Nelson; and Bunting, Hadley, Jay, and Hard. All of these investigators stress the necessity of an adequate dietary although there are some differences in the details. For the child they recommend at least a quart of milk daily, one egg, a teaspoonful of cod liver oil, one ounce of butter, one orange, two or more servings of green vegetables and of fruits, and in addition any food the child enjoys which will go to make up the total caloric intake.

These investigators state that

> Dental caries was arrested even when the major portion of the diet consisted of carbohydrate. This statement, which is in perfect accord with our own experience, calls for serious reflection on the part of many dentists, dietitians and biochemists who have persistently maintained that dental caries is the direct result of the over ingestion of carbohydrate. Many people ingest carbohydrates to the exclusion of the essential foods and the deleterious results of such nutritional habits may be due to the lack of vitamins and minerals rather than to excessive ingestion of carbohydrate.

The dental journals of the day carry articles calling attention to the newer knowledge of nutrition. The special care of the teeth during pregnancy is now looked upon as essential, not only for the sake of the prospective mother, but also for the developing fetus. Two recent issues of the *Dental Survey*[3] feature preventive dentistry from this modern viewpoint. Dr. Fairchild remarks:

> To my mind prevention is the only solution of the pyorrhea problem. Ionization, emetine, vaccines, instrumentation, and drugs have all failed, but proper food has definitely given results. What a splendid thing it will be for humanity if children can be given the wonderful asset of fully developed jaws and soundly constructed teeth.

During the last year the *Journal of the American Dental Association* has presented a number of articles dealing with preventive dentistry and has set forth in its section on Health Education

many helpful hints of an educational nature.

The dentist and the physician must coöperate fully in extending the modern program for mouth hygiene and preventive dentistry. This must begin with definite prenatal instructions and continue until the full complement of teeth has arrived. If dentists can be brought to take as much interest in the preschool child as they now do in the school child we may look for a great advance in mouth hygiene.

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PUBLIC HEALTH NURSING

EVA F. MACDOUGALL, R. N.*

Where Do You Turn When You Want a Public Health Nurse?—One of the agencies to turn to is the Joint Vocational Service, Inc., 130 E. 22d Street, New York City. Here 4 years ago the social workers and public health nurses brought together their vocational centers.

Joint Vocational Service is not organized for profit; it is not even self-supporting, though the percentage income from registrants' placement fees and from subscriptions made by organizations using the Service is increasing year by year. About two-thirds of the volume of work has been in the social work field.

Due to the increasingly close relationship between social work and public health nursing, their united effort in conducting a vocational agency has proved more and more advantageous. The Service has also been working closely with the Education Committee of the National Organization for Public Health Nursing.

In the past 4 years nearly 2,600 public health nurses registered or re-registered with the J. V. S. Of these about three-fourths were high school graduates, and most of the high school graduates had had college work also. Nearly 500 were college graduates, and many of these had taken postgraduate work.

During 1929 and 1930, J. V. S. filled 492 public health nursing positions and assisted in filling 125 more. The percentage of placement in public health nursing has been higher than in the social work field, probably because it is more nearly standardized.

In the past year the number of available positions in public health nursing declined 15 per cent. The decline was most noticeable in beginning staff positions and in executive positions.

Most of the positions filled were in the area around New York City, but the agency has also been reaching out through the country. The number of positions reported from the Mid-west and West have increased considerably.

J. V. S. has filled public health nursing positions at salaries ranging up to $5,000 but the largest number of positions without maintenance offered about $1,800; with maintenance about $1,200. Comparatively few positions without maintenance have offered $2,600 or over; few with maintenance have been available at $2,000 or over.

—*Report of Progress*, Joint Vocational Service, for year 1929–1930, pp. 1–4.

Something New in School Nursing—School nurses in New York State are now called school nurse-teachers. They are certified by the teacher training division of the State Educational Department and must have the following qualifications:

1. Graduation from an approved four year high school course or its equivalent
2. Graduation from a nursing school registered by the regents of the university
3. Certification as a registered nurse in New York State
4. Completion of at least 6 semester hours in approved professional courses in health education

* Please send printed matter or other material relating to public health nursing to Eva F. MacDougall, 6 State House Annex, Indianapolis, Ind.

The term "health teacher" no longer applies to a school nurse-teacher. A "health teacher" must have completed the professional requirements in general teacher-training courses covering a minimum training period of 3 years, specializing in the field of health and hygiene. Nurses' training is of value but is not a requirement.

There should not be more than 1,500 school children to one school nurse-teacher, and in rural districts where the distances are greater, 500 are often as many as a school nurse-teacher can serve.

The trustees or boards of education of two or more districts may unite in employing a school nurse-teacher and where she meets the state requirements the state will pay half the nurse's salary, or $700 as the maximum.

The school nurse-teacher never makes the annual medical examination; that, of course, must be made by the school medical inspector, but in the smaller communities, which he visits very infrequently, she gives most of the health service under his direction.

The education department has defined the function of the school nurse-teacher thus:

> The primary function of the nurse-teacher shall be to assist the school medical supervisor (school physician or medical inspector) and other school officials in protecting the health of school children; by assisting in examining pupils; by rendering first aid service; by visiting homes; by making health inspections of the school plant; and by such other health protective duties as are permitted by law and may be prescribed by the board of education. The secondary function of the school nurse-teacher shall be to teach health habits and health information through contacts with individual pupils, parents, and teachers. The nurse-teacher shall not be regarded as a classroom teacher nor engage regularly in hygiene instruction in classrooms.
>
> Usually the school authorities find it an economy to furnish the school nurse-teacher with some means of transportation. Often the correction of defects found by the school medical inspector cannot be secured without a home visit by the nurse; in many ways the contact the nurse furnishes between the home and the school is a valuable feature. Without proper transportation facilities it must of necessity be very limited and very expensive.

The Education Department of Newark, N. J., has educational requirements for the school nurse similar to those of New York State.—Marie M. Ready and James F. Rogers, M.D., Legislation, Biennial Survey of Education in the United States, 1928–1930, U. S. Dept. of the Interior, Office of Education, *Bull. No. 20,* 1931, pp. 26–27.

A New Visiting Nurse Association—Student Nurse Combination—For some time certain nursing schools have had affiliations with public health nursing associations or visiting nurse associations to give senior nurses 2 months' training in public health nursing, but the Visiting Nurse Association of Brooklyn, N. Y., one of the earliest established in this country, has gone further even than this in affiliations as explained in the April *Survey.*

> The association has formed a "pediatric affiliation" with two of the hospitals in the city to supplement their training of the student nurses in the care of children. At the present time the hospital experience alone is not sufficient to meet the requirements of the New York State Department of Education. The association gives a 6-weeks course to groups of 14 students at a time, consisting of about 8 days of observation in the homes with staff nurses, classes and demonstrations in the care of sick children in the home, and health supervision of infants and preschool children. Time is given for reference reading and for excursions to various health agencies interested in work with children. The remaining time is given to actual field experience and to case study of family health problems.

—The V. N. Teaches the Student, *Midmonthly Survey,* Apr., 1931, p. 98.

Correspondence Schools for Nurses—A timely article has been written by the Bureau of Publicity of the Indiana State Medical Association

that applies to the whole county and we are quoting it:

Becoming a trained nurse by correspondence is as impossible as learning to be an aviator in a bird store. Yet correspondence schools for nurses are in existence which advertise that by taking their courses a person may fit herself for nursing. Several such schools are established in the Midwest and the Bureau of Publicity of the Indiana State Medical Association receives many requests each year in regard to the value and standing of these institutions.

In answer to these requests the Bureau quotes from a bulletin entitled "A Fraud upon the Public—There Is No Angle from Which Advertising of Correspondence Schools of Nursing Can Be Justified," recently issued by H. S. Cumming, Surgeon General of the U. S. Public Health Service.

"To anyone who has ever needed the services of a nurse, the necessity for thorough training must be apparent. Thorough training cannot be and never will be possible through correspondence, for nursing is a profession requiring a technical skill in the performance of many difficult procedures which can come only from doing them over and over again. Yet one constantly sees advertisements of 'correspondence schools of nursing,' 'learn nursing in your own home,' etc.

"The trained nurse must know the ebb and flow of the vital forces. She must be familiar with the danger signals that mark the safe course to recovery. Her mettle must be known by those who vouch for her. What will she do in some dramatic emergency in the operating-room, when quick team work is necessary, or in the silent watches of the night when alone in the ward she holds grave responsibilities? How shall a textbook, alone, describe the indescribable look on a patient's face in the split second preceding catastrophe, when life and death hang in the balance?

"Even the rudiments of nursing cannot be taught by correspondence. To attempt to teach nursing by correspondence is as impossible as it would be to teach medicine.

"No less great than the imposition on the public is the imposition on the young woman who is given to understand that this training is adequate for her to earn her living as a nurse.

"Many requests come to the Public Health Service for appointment in government service from graduates of correspondence schools. They are naturally not eligible for appointment; they cannot get any position under Civil Service, state or federal; their only hope is to receive calls from a private practitioner. Many young women also write this department asking whether a course in a correspondence school will fit them for nursing. In every instance they are advised to enter an accredited school of nursing."

—Correspondence Schools for Nurses, News Release, Bureau of Publicity, Indiana State Medical Assn., Apr. 27, 1931.

EDUCATION AND PUBLICITY

EVART G. ROUTZAHN*

CONVENTIONS—MEETINGS

The announcement of the annual conference of New Jersey health officials included the following:

Six New Jersey health officers will tell how they put across new plans last year. A wide variety of projects is to be covered by this group of talks, such as monthly letters to physicians, vaccination clinics, coördinating nursing activities, filing vital statistics, taking a preschool census and conducting tuberculosis campaigns. These will be short stories of real accomplishments, not theories.

Yes, there will be a playlet. Last year's experiment was so successful that a new demonstration playlet has been prepared for everyone's enjoyment and edification.

If you give talks or demonstrations on nutrition be very sure to look up "How To Interest Men and Women In Nutrition," by L. A. Case. *Journal of Home Economics,* 101 East 20th St., Baltimore. Sept., 1930. *30 cents.*

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York, N. Y.

Suggestions for Planning Meetings—American Nurses' Assn., 450 7th Ave., New York. A mimeographed outline. (It is dated!) Useful for staff or local group meetings. Section on "Planning a Meeting" could help a lot of meetings planned by health workers. The meeting outlines from Wisconsin seem entirely too full. The numerous "ten-minute discussion" topics call for high pressure methods. Surely they should be extended to 20 or even 30 minutes for anything like real discussion in a group. As planned they could only be handled as 10-minute speeches—and concise ones at that. It is good to note the increased use of detailed memoranda on specific work problems. *10 cents.*

"Health At Winter Meetings"—Connecticut Dept. of Health—outlines an offer to send speakers—lists topics and offers illustrative material.

A "Publicity Clinic," conducted by A. Schaeffer, Jr., Natl. Tuberculosis Assn., was a feature of Indiana Tuberculosis Assn. annual meeting.

"The Relation of School Nursing to Health Education," and "How the Nurse Can Aid Classroom Teachers in Promoting a Sound Program of Health Instruction"—topics in a School Nurses' Institute conducted by Connecticut State Dept. of Education.

Because of the World Federation of Education Assn. meeting at Denver, July 7–Aug. 1, with its Health Section, the American Child Health Assn. will not hold its usual Sayville conference this year.

BULLETINS—HOUSE ORGANS

These notes are intended to suggest topics and sources for copy, in addition to offering comment on typography and other details in getting up house organs.

Some of the bulletins issued more or less regularly—especially mimeographed issues—are dated, but lack number and volume. At least consecutive numbering would be a simple matter.

Guessing contest—which city health department uses 6 different kinds of type on the cover page of its house organ?

An early start in Iowa—a "Tourist Camp Sanitation" issue of *Iowa Public Health Bulletin,* State Dept. of Health. Jan.–Mar., 1931. *Free.*

Copy on automobile accidents may be found in the Apr., 1931, *Travelers Standard,* Hartford, Conn. *Free.*

A "news photograph" on the title page of Jan., 1931, *Bulletin,* Milwaukee Health Dept. A smiling girl—holding card ("How's Your Health?" etc.)—caption: "Start The Year With a Health Inventory." *Free.*

Effective use is made of several sentence statements on the lower half of the cover page of *Pittsburgh's Health,* Dept. of Public Health. The page would look better if the whole of that page could be set in the same type—using different sizes—with no italics. *Free.*

Better Health, Dept. of Health, Syracuse, N. Y. Mar., 1931. "Easter Greetings" cover design—purple ink—includes "Mother Goes to School" and "Ordinances You Should Know." *Free.*

"The Citizen and Health" (*Bulletin,* Milwaukee Health Dept. Feb., 1931) is a page abstract of Prof. Winslow's Fort Worth address—which address could be used widely to advantage for pointing out the minimum of public health knowledge for every citizen.

Dairy Council Digests—Natl. Dairy Council, 221 N. LaSalle St., Chicago. Monthly reports on diet research for those who wish the latest developments. *Free.*

"The Department of Health 38 Years Ago," by Dr. A. R. Reynolds, suggests an idea that would make an interesting article in many a town or county. *Weekly Bulletin,* Chicago Dept. of Health. Feb. 24, 1931. *Free.*

Baltimore Municipal Journal (Feb.

20, 1931) tells about "The Health of Our City 135 Years Ago—Today." In that day there was yellow fever. *Free.*

Harlem Health Bulletin, issued by Harlem Tuberculosis and Health Committee, 108 West 136th St., New York. A mimeographed bulletin on half letter size sheets, green paper, double red cross printed in corner of the top sheet. Contents illustrate activities in a Negro district, and a distinctive form of bulletin. *Copy free.*

The Michigan Sanatorium Assn. utilized the Jan., 1931, issue of *Michigan Out of Doors* (Michigan Tuberculosis Assn., Lansing) to acquaint the state with the tuberculosis sanatoriums. The body of the issue is made up of large page half-tones which "bleed" over the edge of the pages—descriptive text and smaller pictures on the right side. An 8″ rule with 3 light rules at the right of the text cuts down length of text line—gives interesting effect. If readers "bleed" photographs we suggest that they try a grey or black 8″ line on the inner edge of the photograph so that it won't seem to run under the opposite text page. *Free.*

The "Public Health Nursing" issue of *The Commonwealth* (Oct.–Dec., 1930), Massachusetts Dept. of Health, includes: "Education and the Public Health Nurse"—"Staff Education"—"Group Education in Small Communities"—"Post-Graduate Education"—"Parental Education in a Public Health Program." *Free.*

"Putting the Layman Wise on Cancer" is the theme of Feb., 1931, issue of *Health,* New Haven Dept. of Health. Fine title—good text in 2 short articles for the "Layman." *Free.*

Quarterly Bulletin, Frontier Nursing Service, Lexington, Ky., gets a pleasing effect by use of an ivory dull-finish paper. *Free.*

"Selling Health In Industry," by H. H. Keller. *Pennsylvania's Health,* State Dept. Jan.–Feb., 1931. What the Bell Telephone Co. of Penn. does. *Free.*

Tidings is the multigraphed bulletin of the Division of Child Hygiene, Massachusetts Dept. of Public Health. The size, 5¾″ x 8½″, printed cover, some illustrations, stapled—gives an interesting variation from usual practices. *Free.*

EDUCATIONAL

"Food Plan for Family of Five at $7.50 a Week"—Public Health Federation, 312 W. 9th St., Cincinnati. 4 pp. An inadequate emergency diet. *Free.*

"Health On The Farm and In The Village," by C.-E. A. Winslow. The pamphlet contains "Outstanding Lessons of the Cattaraugus County Health Demonstration," a chapter from the full report. Milbank Memorial Fund, 49 Wall St., New York. *Free.*

"The High Cost of Personal Neglect," by Dr. J. Clark, 114 East 54th St., New York. Reprint from *Hygeia.* Jan., 1931. A plea for periodic examinations. *Free from the author.*

"How To Train Your Baby To Keep Dry"—Massachusetts Society for Mental Hygiene, 3 Joy St., Boston. 4 pp. Good sample of size, paper, typography. *5 cents.*

"Illness and Dependency"—"Private Group Clinics"—two recent issues of Committee on the Costs of Medical Care, 910 17th St., N. W., Washington. *Free.*

"Lightning!"—Health Dept., Racine (One knows the city if one remembers Dr. Bauer's address!—not given on the folder). A good 4-page folder on smallpox. *Free.*

"We Ask Your Help!" (excluding child from school); "Pointing the Way" (reporting school physician examination)—school examination appointment card for presence of parent—Racine Health Dept. *Especially good text. Free.*

"Milk Every Meal: Morning, Noon,

Night "—College of Agriculture, Madison, Wis. 8 pp. *Sample free.*

A New Year's Greeting folder—contents adaptable for use anywhere at any time of the year—Public Health Nursing Out-Patient Dept. of Englewood (N. J.) Hospital. "Around the Day with the Nurse in Gray" in 7 photographs with *good captions. 4 cents for copy.*

"A Program of Life for All Who Desire to Live Long"—Alabama State Board of Health. 8 pp. Not dated. Fourteen points grouped under "Habits," "Air," "Ford." Could be used as 14 daily "boxes" in a newspaper. Could we cut the title to read: "How to Live Long?" *Free.*

"Scarlet Fever"—another of the miniature booklets issued by John Hancock Life Insurance Co., Boston. 8 pp. Tells what most needs to be known—and about all that most people are willing to learn. *Free.*

"We Used to Think—Wrongly: We Know Now—For Certain"—Brooklyn Tuberculosis and Health Assn., 293 Schermerhorn St. 4-page folder—rough finish paper—inside pages contrast old ideas with current knowledge. *Free.*

"Whooping Cough"—"Measles"—"Scarlet Fever"—"The Family Teeth"—"Diphtheria Costs! Prevention Pays!"—5 4-page folders on good quality rough finish paper—each different color—source indicated in small type on last page: "Tennessee State Dept. of Public Health—Nashville, Tenn.—1930." *Samples free.*

TIMELY

Some of the material listed below will be too late for use this season, but now is the time to secure copies for use next year.

"What Health Officers Do"—*Bulletin,* Indiana Board of Health. Oct., 1930.

"Nineteen Thirty the Best Health Year"—*Statistical Bulletin,* Metropolitan Life Insurance Co. Jan., 1931.

"The Hollywood 18 Day Diet"—*Hygeia.* Mar., 1931. What is wrong with it—and why.

"Scarlet Fever and Measles." Radio talk. New York City Dept. of Health. *Free.*

"Improved Drinking Facilities in Places of Employment"—*Municipal Sanitation,* 24 W. 40th St., New York, N. Y. Feb., 1931. *25 cents.*

Unemployment: "Hard Times and Health"—*The American Public Health News;* "Economizing Wisely"—Connecticut Dept. of Health; "Keep Up A Clean Front"—*Cleanliness Journal,* Cleanliness Institute, 45 E. 17th St., New York, N. Y. *Free.* "How baths and fresh collars help when jobs are scarce."

Carbon-monoxide poisoning: *Pittsburgh's Health,* Dept. of Health; Connecticut Dept. of Health (press); *The Foreman,* Employers' Mutual Liability Ins. Co., Wausau, Wis. (good 4-line analysis). *Free.*

Colds: Iowa Dept. of Health (press release); Illinois Dept. of Health (radio talk); Connecticut Dept. of Health—also "Effective Temperature" (press); New York State Dept. of Health (radio); Detroit Dept. of Health (press); Oregon Board of Health—fresh air (press); *Chicago's Health,* Chicago Health Dept.; New York City Dept. of Health (press); "The Billion Dollar Loss From Colds," *Hygeia.* Feb., 1931.

Pneumonia: Detroit Dept. of Health (press); U. S. Public Health Service (radio).

"How to Keep Warm in Winter" (the house, moisture, warmth in bed, etc.—much neglected topics), Rochester Bureau of Health (monthly bulletin).

MOTION PICTURES

"Test for Titles," by A. L. Gale. *Movie Makers,* 105 West 40th St., New York, N. Y. Feb., 1931. *25 cents.* "What to do and not to do when you

are writing titles." *Very practical and helpful.*

A carbon monoxide picture has been made by the Bureau of Mines in cooperation with an automobile company. Where c.m. develops and how to avoid its perils. *For transportation charges.* U. S. Bureau of Mines, Pittsburgh, Pa.

"The Hit That Scored," said by a number of safety people to be the best one-reel public safety film they have ever seen, has been produced by the Bell Telephone Company of Pennsylvania.

The film shows in an unusually interesting and realistic fashion some of the adventures of a good natured but reckless truck driver who believes in bluffing the other fellow—until an accident that almost causes the death of a little girl teaches him the lesson of sa'e driving.

The film has been found to be very effective without being in the least gruesome, according to those who have viewed it.

Apply to National Safety Council, 20 N. Wacker Drive, Chicago, Ill., or Citizens' Safety Committee, Philadelphia Chamber of Commerce.

Movie Makers (Feb., 1931) reports on two amateur pictures which illustrate two different possibilities:

To serve in the membership drive of the Crippled Children's Clinic, Birmingham, Ala., which organization provides free of charge orthopedic attention to children unable to pay. The Long Journey, 1,600 feet, 35 mm., produced by Jack London, has recently been completed. Making of the film required between ten and eleven months, it being necessary to film the children on their entry to the Clinic and again several months later when they were on the road to recovery.

Showing of the film to the Shriners' Club alone resulted in over $900 in memberships for the Clinic, Mr. London reports. Since the cost of producing the film was in the neighborhood of only $246, the actual cost of material, Mr. London having contributed his services as cameraman, the value of an amateur production in fund raising is again forcibly demonstrated.

An Auto Biography, the one reel 16 mm. film on accident prevention produced by Jack Lewis, Wichita, Kansas, is now being used in the intermediate schools of Wichita in conjunction with a talk by a traffic officer. Several of the schools have booked the film for a second showing to follow two weeks after the first. The film has also been shown at Chamber of Commerce and Lions Club meetings and has, at the request of the street car company, been projected for their employees.

ADVERTISING

One easy step every health worker can take to help combat fake or extravagant advertising is to send copies to the National Better Business Bureau, Chrysler Bldg., New York, N. Y. If your newspaper editor is coöperative you might urge him to check doubtful advertising by writing to the above address.

Whatever you do—and it is reported to the editor—we will give you credit in the "Advertising" section of Education-Publicity Headquarters at Montreal.

Advertising & Selling, New York, N. Y., gives a full page to an advertisement quoting the Health Officer of Poultney, Vt., congratulating the American Cigar Co. for "fighting the Spitting Evil"—along with a letter to the editor in which the Health Officer explains that

I had no idea that it was to be used for advertising purposes, but understood that it was merely for my opinion on spit tipping and spitting in general.

The Health Officer now agrees that it is unwise to write a letter of commendation "without giving it due consideration."

NEWSPAPERS

"The biggest newspaper story that could break today" was suggested to *Editor and Publisher* by leading newspaper editors. Three or four suggested that it would be the "announcement of an absolute and indisputable cure for cancer."

David Lawrence, editor of *United States Daily,* addressed the annual meeting of American Social Hygiene

Assn. upon "The Function of the Press in Social Hygiene Education." He stressed the need of skillful preparation of material for the press.

Although health workers have been emphasizing the unwillingness of newspapers to mention the names of the venereal diseases, at least one city health department follows the same policy in its annual report. "Social Diseases" is as far as that health officer will go.

For about 12 years, every week, "Our Babies," a newspaper column on the care of babies, has been issued by Royal New Zealand Society for the Health of Women and Children, Dunedin, New Zealand.

Letters to editors and citizens are being sent out by Tennessee Tuberculosis Assn. in opposition to an effort to reduce the appropriation for the State Dept. of Health.

NEW

Eugenics, American Eugenics Society, New Haven, Conn., has become *People.* "A popular magazine of human biology and the manner in which it may be manipulated to achieve the improvement of the race."

EXHIBITS

Now is the time to start preparations for state and county fairs.

Numerous suggestions as to planning and making exhibits will be found in this department of the *Journal* running back several years.

A memorandum of several pages on fair exhibits will be sent upon request to the editor.

Last summer the Illinois State Dept. of Health demonstrated a homemade milk pasteurizing outfit which need cost less than $5.00. Ask Illinois for details.

Connecticut State Department reports that weighing of the children is one of the interesting features of the health exhibit of the State Department of Health. It gives the staff in attendance an opportunity to discuss health with the parents and incidentally it is found that parents themselves are the chief offenders in breaking health laws.

Thousands are attracted to the health exhibit at the fairs. There is a continuous showing of health films and many hours during the day the health tent is taxed to the utmost. At a fair which extended into the evening hours the films program had to be frequently interrupted to clear the tent and provide fresh air and ventilation, the pictures proved to be so popular.

Advice given by *Red Cross Courier* seems to apply to displays by other organizations:

> Simplicity in conception for an exhibit or a float is its own reward. Our own people know that to concentrate attention upon one or two objectives serves to retain them in the mind. Perhaps, because of the multiple services rendered by the Red Cross, our exhibits and floats have been somewhat complicated. That is natural, for every one wants to tell a story in all its detail. However, telling a story and presenting it as a picture are very far apart—for the picture, to be effective, must have a central theme, a high light of the important element of the composition. In other words, in an exhibit or a float the mental processes are animated by the striking thing. The eyes focus on one point and see that one thing. Consequently to do the best to visualize Red Cross to the spectator, it is well to remember that simplicity and concentration upon the central picture are always advisable.

"How can I cultivate in my children a zest for food?" might be the theme of an exhibit. "That Zest for Food," by Rachel Ash (*Hygeia.* Oct., 1930), includes some of the possibilities for exhibit use.

The Community Health Association was represented in a big Boston parade by

> A delegation of nurses who marched, led by one dressed as the first district nurse in Boston, of 1886. A striking sign carried by boy

scouts explained it all in a few words. The entire group attracted much attention and favorable comment.

"The International Exhibition of Hygiene, Dresden, Germany," by S. A. Cosgrove, M.D. *Public Health News*, New Jersey Dept. of Health. Dec., 1930. An excellent outline of the displays. *Free.*

"Overworked Spot Maps," by E. J. Reeder. *Public Safety*, Natl. Safety Council, 20 N. Wacker Drive, Chicago. Mar., 1931. Illustrates spot maps for automobile accidents; their value; what to use and not to use. Also, "Outdoor Displays," by L. W. McIntyre. How Pittsburgh is using startling three-dimension exhibits in open spaces. *Free.*

The New York City Cancer Committee, 34 East 75th St., has devised an unusual traveling exhibit. A group of 6 boxes provide a series of stages in which miniature scenes are displayed. The boxes make for easy transportation about the city. They are built up in pyramid fashion—on a table, or in a window on a low platform. Characters and backgrounds are cut outs, lacquered in colors. Each is removable so that new material may be inserted in the boxes. The boxes are in black lacquer with monel metal binding strips. Designing and executing the exhibit cost $1,000, with $600 for boxes and lighting. Designed by F. J. Rigney. As is so often the case the use of all capital letters for the captions makes reading difficult—especially with hand lettering. The unlighted captions suffer in contrast with the well-lighted scenes. Borrow a photograph of the exhibit to understand it fully.

"Just one thing at a time" is urged by Edith M. Ross in *Survey:*

> Are most of us eye- or ear-minded? Do we notice more, do we remember better, what we see or what we hear? From my own experience, first as a county nurse, then in state work, I find that people remember better what I say if they can see at the same time something allied to the subject of my talk. Charts, especially in speaking to adults, always help. Tack maps are nearly always fascinating. There is something concrete, vital about them—something that takes away the intangibility of mere figures and brings facts home to us. Our public is far more hungry for information than we imagine. But we must be careful not to repel it by trying to feed it dull, dry, lifeless facts.
>
> The staff nurses of the Minnesota Public Health Association, when they make school inspections, use a small cloth dog or monkey or a "Felix" cat to arouse the interest of the younger children. Into any of these, which consist of a head and forelegs, we run the fingers of one hand. Then we get the children to ask it questions such as: "How many glasses of milk do you drink?" or "What time do you go to bed?" And the dog or cat or monkey, as the case may be, waves one paw slowly to indicate the number of glasses of milk he consumes or the hour at which he retires. He shows them, too, how he washes behind his ears, how he brushes his teeth. There are few health habits which these toy animals cannot help us expound. And when I return the following year, I find that what Coco, my monkey, or Milko, my dog, has told them has not been forgotten.

What and What of It?—What you are doing in broadcasting health material, and whatever evidence you have that audiences are listening in will be of great interest in a session at the National Conference of Social Work in June.

Please send copies of any typewritten or printed reports, with supplementary information. Especially wanted: *do you do anything beyond straight talks?* Please send now to editor of this department.

All of this material, and more, will be shown also at Montreal in September.

BOOKS AND REPORTS

Insects, Ticks, Mites and Venomous Animals of Medical and Veterinary Importance. Part II—Public Health—*By Walter Scott Patton, M.B., Ch.B., F.E.S. Dept. of Entomology, School of Tropical Medicine, Liverpool, England,* 1931. 740 pp. Price, $6.00.

This volume is Part II of the series treating of the pests mentioned in the title, Part I being devoted to the medical, while this deals with the public health standpoint. The arrangement is in general the same, the successive chapters being arranged for the sessions of classes working for the diploma in public health, the whole course consisting of 9 meetings of 2 hours each.

During the first part of the meetings, brief explanations of the zoölogical nomenclature, classification, etc., are given, followed by laboratory work in which typical examples of the orders of insects discussed are exhibited. Short summaries of the material covered at each meeting are given, and a revision of the whole ends the part of the volume devoted to the course.

Two appendixes follow, the first of which describes the dissection of the alimentary tract and salivary glands of the mosquito, while the second, 340 pages in length, is devoted to the household arthropods and their control. This ends with lists of those which are destructive to household belongings, such as books, leather, carpets, tapestries, blankets, furniture, and woodwork; foodstuffs, such as stored grains and their products, spices, coffee, cacao beans, dried and fresh fruits, cheeses, cured and fresh meats, drugs, museum collections, etc. A section is given to those curious insects which damage lead.

There are innumerable illustrations and 57 plates, a number of which are in colors, and all of which are exquisitely done.

Our growing knowledge of the important part played by insects in the spread of disease and of their menace to our comfort as well as our food supplies gives this book an added value. No review can do full justice to it. It must be seen and studied.

The frontispiece is a photograph of Dr. Leland O. Howard, for many years Chief of the Bureau of Entomology of the U. S. Department of Agriculture, who is termed the "Father of Public Health Entomology." The legend pays him a well deserved tribute which will be appreciated by all Americans. Bound on the inside of the back cover is a chart giving the classification of arthropods of public health importance.

The printing and make-up of the book are excellent, and there are two good indexes, one to the part of the book devoted to the course and Appendix I, and the other to Appendix II. While designed for teaching purposes, this series contains an enormous amount of information which will be found most useful to physicians and public health workers. Appendix II will appeal to a wide range of students as well as to the general public. The price of the book is remarkably low. M. P. RAVENEL

Cancer and Scientific Research—*By Barbara Holmes, Ph.D. London: Sheldon Press,* 1931. 160 pp. Price, $1.50.

Cancer is generally conceded to be one of the most serious of all public health problems. Despite the intensive educational efforts at cancer control

which have been directed at the laity, malignant diseases as a whole have not been diminished. Instead, there has been, in the opinion of many competent observers, a persistent increase in neoplastic diseases, although this now seems to be slowing down.

The wider the established knowledge about cancer, the better. Authoritative books of a popular nature on this subject are, however, unfortunately, rare. This little book is a worthwhile contribution to cancer literature because it presents an able digest and interpretation of a vast amount of experimental research of a highly technical nature.

Sanitarians who desire to add to their conception of the cancer problem will find this book of value. The style is pleasing and it is written, in general, with true scientific restraint, although some biologists may not agree wholly with the conclusions regarding the inheritance of cancer, which are based chiefly on the disputed work of Maude Slye. The highly intelligent lay reader will also find the book of interest, for as Sir F. Gowland Hopkins writes in a brief preface, "It is striking, indeed, to find how much enlightenment is given in so small a book."

JAMES A. TOBEY

Laboratory Diagnosis—*By Edwin E. Osgood, M.A., M.D., and Howard D. Haskins, M.D. Philadelphia: Blakiston,* 1931. 475 pp. Price, $5.00.

As stated in the preface, the object of this book is "to teach the habits of thinking that are necessary to obtain the fullest information from laboratory sources." The authors are professors in the University of Oregon Medical School and the book is the outgrowth of their experiences in teaching and in the laboratories of the hospitals connected with the university.

The book is divided into two parts. Part one is primarily of interest to the practitioner and considers the knowledge which he must have available at the bedside of the patient. At the beginning of each chapter a brief résumé is given of the essential anatomy, physiology, biochemistry and pathology and at the close of each, very useful tables of summaries and limits of laboratory findings to be expected in normal and pathological conditions are found. A special "index by diseases" of this part should be very useful.

The second part of the book is devoted to the details of laboratory procedures involved in the different methods recommended in Part I. Two short chapters are given to the Calibration of Apparatus and the Preparation of Standard Solutions.

The treatment of bacteriology and serology is admittedly very incomplete, consultation of textbooks on these subjects being recommended. In every case the methods which the authors prefer are emphasized and in many cases are the only ones given. The omission of all methods using Nessler's solution is striking.

Throughout there are generous footnote references to the original literature. Many useful tables which aid in calculation are given and the 6 colored plates in the chapter on Hematology are especially well done. The book is very well printed on good paper and is free from typographical errors. The unusual treatment of the material given, especially in Part I, should make the book interesting and useful both to the practicing physician and the laboratory worker.

A. B. HAW

Safety Education—*Idabelle Stevenson. New York: A. S. Barnes & Co.,* 1931. Price, $1.00.

There are several excellent books on safety and accident prevention, but this little volume by the Executive Secretary of the Education Division of the National Safety Council stands quite unique as representing the essentials of

Safety Education. It is evidently written by an expert who is offering to the "teacher-leader a program full of wholesome procedures that bring the full force of safety into the life of the individual pupil, the school group, and the community."

Ten short, tersely written chapters cover the problem, general methods of teaching safety, student safety organization, safety patrols, accident reporting and inspection, publicity, assembly programs, special projects, safety in the athletic program, and essential information in regard to street safety, safety in sports and recreations, and in the home.

Safety data, charts, axioms, "what-to-do's," and "how-to-do-it," and a list of junior safety councils, manufacturers of badges, etc., and a selected bibliography accompany. Safety consists in the correct way of doing things, but first there must be a correct way of thinking, which means proper training in childhood. Incidentally, the data show that accidents among children are decreasing while those among adults are decidedly increasing. Credit for this may justly go to the current child safety program. Teachers, parents and others will find this book of paramount value.

EMERY R. HAYHURST

What **We Drink**—*By Various Authors, with Introduction by Sir James Crichton-Browne. Edited by Hugh Wansey Bayly. Issued under the Authority of The Scientific Committee of the True Temperance Association. London: William Heinemann,* 1930. Price, $.40.

Evidently written for lay people, this book will disappoint those who look for something more exact or extensive. The information is correct as far as it goes. Inasmuch as the great use of soft drinks is peculiarly American, this chapter particularly will fail to satisfy American readers. There is scant mention, for example, of the large number of soft drinks in this country, which are all classed as "Coca-kola," which contain caffein, but some five pages are given to a discussion of the English "public house system" in which foods as well as drinks are sold. In general, however, it will aid the public in the proper selection and control of beverages, and be an aid to temperance.

M. P. RAVENEL

Food Poisoning and Food-Borne Infection—*By Edwin Oakes Jordan. Chicago: University of Chicago Press,* 1931. 286 pp. Price, $2.50.

This book, belonging to the University of Chicago Science Series, supplants *Food Poisoning* by the same author, issued in 1917. Since that time, poisoning by foods has been intensively studied, particularly in England and America. The packers themselves were among the first to recognize the necessity of this, and have appropriated liberally for investigations carried on at the Universities of California, Chicago, Harvard, and Stanford. The author played an active part in some of the most important of these, and is peculiarly well fitted to write on the subject. He has put the sum of available knowledge into a small space, but has covered the necessary points in satisfactory fashion.

We consider the section on Spoiled and Decomposed Foods, short as it is, of more than usual interest, perhaps because it discusses matters which are not so often considered as the well known and too often occurring acute outbreaks. Certainly this matter needs further study. In view of the "imperfect and unsatisfactory" state of our knowledge, we commend the opinion expressed that we must continue our methods of protection.

The printing and make-up of the book are good, the illustrations fairly so. Good indexes of authors and subjects end the volume. M. P. RAVENEL

Lateral Curvature of the Spine and Round Shoulders—*By Robert W. Lovett, M.D. (5th ed.) Revised and edited by Frank E. Ober and A. H. Brewster. Philadelphia: Blakiston,* 1931. 240 pp. Price, $3.50.

The fifth edition of Lovett's *Lateral Curvature of the Spine and Round Shoulders* adds to this classical treatise the results of modern experience. The 24 years that have elapsed since the first edition have produced nothing to controvert the admirable research of Dr. Lovett, upon which have been based the principles of treatment since that time. It is along lines of treatment itself that changes and additions to the original edition have been found necessary. Both the new material and the reorganization of the old render the present edition of vastly greater value to the practitioner.

The revamping of the section on exercises has been particularly successful, and the clarity of both pictures and text renders that part of the work of inestimable value. This may also be said of the chapters on supporting and corrective devices. The ingenuity and effectiveness of the turnbuckle jacket are strikingly brought out both in the photographs and roentgenograms.

By no means the least of its values is the brevity and compactness of the book. Aside from its scientific worth, it is indispensable as a working manual for every orthopedist, and will be a most useful guide to those interested in the preventive aspects of child culture.

KENDALL EMERSON

Determination of the Interrelations, Partial and Multiple, Between Various Anthropometric Measurements of College Women—*By Mary Louise Boillin. Teachers College, Columbia University: Bureau of Publications,* 1930. 63 pp. Price, $1.50.

A study of college women is described wherein data are collected from which the correlations of body weight with various anthropometric magnitudes are obtained. The questionable assumption that body weight, properly chosen, is a fundamental index to health even at maturity seems to underlie the point of view. Height is not as reliable in determining weight expectancy as has been believed, other skeletal dimensions having more value. In late adolescence, weight may have some real diagnostic value in determining the degree of health.

ALLEN E. STEARN

Facts and Figures About Tuberculosis—*Compiled by Jessamine S. Whitney. New York: New York Tuberculosis and Health Association, Inc.,* 1931. 63 pp. Paper. Price, $.75.

Miss Whitney's monograph, *Facts and Figures About Tuberculosis,* will fill a real want.

To student and teacher in need of up-to-date facts on the important aspects of tuberculosis, it will be invaluable. Concisely and clearly, Miss Whitney has delved into and makes available here measured knowledge of the mortality rates from tuberculosis in the entire United States for a whole generation; the differences by sex and by color in different sections; the mortality percentage in important occupational groups; figures of geographical distribution; relation to other important causes of death; nationality rates, comparative death rates in various parts of the world; data on institutional facilities, clinic, sanatorium and nursing. Particularly informative also is the unusual chapter on tuberculous infection and the percentages of reaction found by various investigators in different communities.

In the United States, next to widespread general education, it has been well remarked that public health progress has been the most distinctive achievement of the American democ-

racy; and the measures for the control of tuberculosis have been one of the leading parts in this. To the social student, Miss Whitney's measured statements on the prevalence and gradual diminution of tuberculosis in the United States offer a rare mine of contemporaneous historical facts to be studied readily here. To the public or private health official charged or connected with tuberculosis responsibilities, the information should be most helpful in organizing his work more understandingly. G. J. DROLET

Health Field in Social Work, *From "Proceedings of the National Conference of Social Work,"* 1930.

One seldom picks up a volume of convention proceedings whose table of contents offers so many names of national prominence and authority in as many fields as the volume made up of selected papers presented at the 1930 Conference of Social Work in Boston. In the presidential address of Dr. Miriam Van Waters one reviews the six decades of progress since 1874 when the first "Proceedings" was published and he finds that "we do not solve our problems by the techniques we evolve; we merely outlive them"; that the same problems confront the worker today as in 1874, but that the decades have brought a philosophy of understanding life which gives to those who practise it the ability to face life realistically, as it is, and as it may be, without dogma or fear.

George W. Wickersham's very enlightening address on law enforcement urges education and persuasion in law observance to supply what the authority of church and home now fails to provide.

Several outstanding papers from the health section are included. The first of these, "The Chronic Disease Problem in Massachusetts," by Dr. Herbert L. Lombard outlines very extensive studies in the control of chronic disease in the middle-aged. The five variables which have significance in the problem are age, sex, economic status, density of population, and nationality. Additional data are being collected in regard to life habits to determine importance of such factors as diet, emotions, rest and relaxation, and environment.

Since the Massachusetts Department of Health has developed one of the most extensive state-wide programs for cancer, Dr. G. H. Bigelow's paper, "The Massachusetts Cancer Program," is of utmost significance and interest. Dr. C.-E. A. Winslow's very interesting paper on "The Health Survey as a Social Instrument" gives a practical and conservative discussion of the value of the health survey as an instrument of measurement and standardization, but with the warning that while a mathematical formula applies to all cases in its entirety, a form of social organization does not; so that a successful survey must recognize community characteristics and combine outside expert knowledge with local experience.

Wesley C. Mitchell's paper, "The Economic Basis for Social Progress," brings out the significant fact that the average earnings of $1,205 or $1,304 should no longer be compared with the minimum family budget of $2,057 or $2,100, for the average family has 1.8 gainful workers including young and old people. HOWARD WHIPPLE GREEN

Dental Health—*By George A. Swendiman. Boston: Stratford Co.,* 1930. 121 pp. Price, $3.00.

Chapter I on habits is good advice for the layman. We cannot agree with all the ideas expressed in Chapter II on the temporary teeth. Experience and research are changing some of the old accepted viewpoints expressed by the author.

Chapter IV presents clearly a true statement regarding the cleaning of

teeth which should be understood by all laymen. Chapter V presents the focal infection idea in the light of the most recent researches, which is the best viewpoint the profession has today. It seems most improbable that we will change the viewpoint that non-vital teeth are always a menace to their host.

Chapter VI on pyorrhea is a sane statement with good advice for the layman. Chapter VII on oral hygiene presents some questionable methods but it is hard for men to agree about something that is not based on true research. We doubt whether the method of brushing the teeth makes very much difference just so we keep the teeth reasonably clean.

Chapter VIII gives the layman many true and valuable points about dentistry that should help him to select the type of service he desires. Chapter IX presents good points on the social side of dental health but we fear the writer has not really met the social problems in any large way. His attitude is good, but his experience with the problems of social dental needs appears limited.

On the whole, the book is good. It is well written, clear and simple in explanation, that is, it is as simple as it is possible to make a highly technical subject.

The book covers the field in a way not covered by any other book with which I am acquainted.

It can be honestly recommended as an excellent book for the layman.

HARRIS R. C. WILSON

Civilization and the Cripple—*By Frederick Watson. Bale, Sons & Daniellson, Ltd.*, 1930. International Society for Crippled Children, Inc., Elyria, O. Price 10/6 net, $2.50.

This is an excellent presentation of the cripple and his relation to society. Included under the term "cripple" are all industrial and other accidents as well as conditions resulting from disease and congenital defects in adults and children.

Mr. Watson speaks from a long familiarity with his subject. He founded and has edited for more than five years the international quarterly journal *The Cripple*. He has also had experience in organization as county director of the British Red Cross Society and chairman of the Montgomeryshire Voluntary Orthopedic Association, and experience in rehabilitation as deputy controller in the Appointments Department of the Ministry of Labor during the demobilization period after the Armistice.

The book as a whole is extremely interesting. An historical review of the cripple from antiquity down to 1930 is given. It was not until the 18th century that experience and reason came into play. The first Factory Act in England was in 1802, though already the great English, French and German bone and joint surgeons had done notable work, and in America, Dr. John Ball (1789–1862) opened his hospital for cripples. John Little (1810–1894) was the first great apostle of orthopedic surgery in England. The great influence of the war, the rapid development of orthopedics as a speciality, and the focusing of attention on the crippling conditions in soldiers, are well discussed.

It is interesting to note the progress which has been made in this country and the emphasis placed on it by Mr. Watson in the chapter entitled "The American Scheme." The chapter on "Prevention and Rehabilitation" is forcefully written and contains many excellent suggestions for the solution of the problem. The book is well written and presented in a most orderly fashion, and is of vital interest to any one associated or interested in the problem of "The Cripple."

The printing, illustrations and make-up are excellent. The book can be recommended without reserve.

G. KENNETH COONSE

HEALTH DEPARTMENT AND OTHER REPORTS

IRA V. HISCOCK

Manchester, N. H.—The 1930 printed report of this city of 76,834 population records a death rate of 11.0, a birth rate of 16.9, an infant mortality rate of 67, and a tuberculosis death rate of 35. In the tuberculosis clinic there was an attendance of 798, 222 new patients being examined. A total of 1,561 home nursing visits was made by the clinic nurse.

In the administration of the school health program, the schools have been divided into 3 districts with a physician and 2 nurses assigned to each district. Children in the kindergarten, first, fourth, and eighth grades are examined annually. Children in the kindergarten and first two grades, whose parents so request in writing, are given toxin-antitoxin by the school physician. Weekly clinics for giving the treatment to preschool children and others who wish it are held at the office of the health department.

Newport, R. I.—This city, with a population of 27,430, including 1,926 persons of the U. S. Army and Navy, reports 456 births and 353 local deaths, and an infant mortality rate of 37.28. Four cases of diphtheria occurred with no deaths. Since 1923, 3,312 children have been immunized, including 47 per cent of the school population. The health department expenditures amounted to $.86 per capita. According to the 1930 report, for 12 years there has been enforced an ordinance permitting the sale of only milk of pasteurized or certified grades.

Maryland—An analysis of 84 typhoid fever carriers listed in the office of the State Department of Health shows that 256 cases of the disease were traced to these sources. By occupation, 39 per cent were housewives, 11.9 per cent milk handlers, 9.5 per cent cooks, 2.4 per cent laborers, 7.1 per cent farmers, 4.8 per cent shell fish handlers, 9.5 per cent school age children, and of 17.8 per cent occupation was not stated. By bacteriological examination, 48.7 per cent were found to be stool carriers, 9.5 per cent urine carriers, 15.5 per cent stool and urine carriers, 26.3 per cent not stated. A definite history of previous typhoid or paratyphoid was stated in 69 per cent of the carriers.

During the year the Bureau of Child Hygiene conducted 420 conferences at which 6,791 children were examined and referred to their physicians. Prenatal conferences were continued. Ten orthopedic conferences were conducted in the counties by representatives of the League for Crippled Children in cooperation with the bureau. Courses in midwifery were offered in several counties, and only those midwives were licensed who attended these classes or had received corresponding instruction. An important survey of maternal deaths in the state was completed and preliminary figures are presented in the annual report. Negro health week was observed and a colored physician representing the bureau conducted child health conferences for negro children in several counties of the state.

Knoxville, Tenn.—The 1930 annual report, in mimeographed form, outlines the work carried on by the bureau of health and contains excellent tabular and graphic material of interest in illustrating the descriptive text. Certain low records were established, including infant mortality (70), typhoid (1.8), diphtheria (2.8) and tuberculosis (69). Expenditures amounted to $104,941 in this city of 107,200 population

The work of the division of general sanitation is organized on a district basis, there being 6 districts. Of the total nuisances abated, it is noteworthy that 96 per cent were found by the inspectors on routine premise to premise inspection, while 4 per cent of the corrections resulted from complaints. There were 2,966 sanitary sewer connections effected during the year. Milk control is exercised in accordance with the standard milk ordinance of the U. S. Public Health Service.

Orange County, Calif.—This county of 800 square miles, with a 1930 population of 118,611, even distribution of population, and good roads, is well adapted to the county unit plan of health administration. According to the annual report, 12 incorporated cities have contracted with the county health department for central health administration. The largest city, Santa Ana, has a population of 30,332 and is centrally located. The recording of vital statistics was transferred to the health department during the year. Another advance step was the completion of arrangements in two communities whereby the school districts and the county shared the expenses of the public health nurses, so that in each of these localities the one health worker carried on a generalized program.

During 1930, 2,130 individuals were given 3 immunizing doses against diphtheria. There were 164 cases and 3 deaths from this disease. There were 2,375 smallpox vaccinations performed.

The health promotion program for the infant and preschool child takes the form of mothers' educational centers, 358 conferences having been held during 9 months of 1930, with an attendance of 4,572, 562 visits being made by Mexicans. Home visits in the interest of child hygiene numbered 1,123. A weekly bulletin is sent by the health department to all physicians and health workers in the county, stating the presence of communicable disease and containing suggestions regarding health work. The year's budget amounted to $66,727.

Palama Settlement—Palama Settlement is a health and welfare center in Honolulu where a fourfold program of medical, dental, nursing and recreation services is provided. This is the chief voluntary health organization in the city. The 1930 annual report is one of the most attractive and comprehensive reports of the year.

More than 12,000 families received care last year, and through the recreation department some 10,000 individuals were helped toward better citizenship. In the field of public health nursing, a generalized city service has been developed through a pooling of the nurses of Palama and of the Board of Health. An average of 115 poor sick patients are seen daily by the medical staff. Preventive dental treatment provided for 4,133 first and second grade school children last year. Thirteen well baby and preschool conferences were regularly held. Two health building summer camps for undernourished boys and girls were maintained. Health education was highly developed through talks, radio, motion pictures, exhibits, articles, and activities to advance the health knowledge of the community. Boys were taught leadership and responsibility in clubs and through athletics. Girls were taught home-making, swimming, dancing, camping, and participated in athletics. Staff members served on 18 major health and welfare committees of the city. Expenditures amounted to $194,503.

During the year, the nurses assisted in immunizing 7,753 preschool and 331 school children against diphtheria, and in the health examination and vaccination of 5,510 preschool children. There were 962 medical examinations of foot-

ball and basketball players. Exclusive of 1,712 prenatal clinic visits, there were 35,919 visits to the medical department by individuals representing over 13 racial groups, the Japanese, Porto Rican, Portuguese, Korean, Hawaiian, and Filipino races predominating. X-ray examinations numbered 2,138. Over 50 per cent of the preschool children in the city have been protected from diphtheria by immunization and over 65 per cent have received health examinations.

San Jose, Calif.—The 1930 report indicates for this city of 57,651 population a birth rate of 14.1, a death rate of 10.8 and an infant mortality rate of 45.7. Of the 588 births, 72.6 per cent occurred in hospitals. Excellent graphs illustrate the statistical report. There were 515 children immunized by the health department with toxoid and 533 vaccinated against smallpox. Two new milk pasteurizing plants were built during the year, making a total of 9 in operation in the city.

Activities in popular health instruction include monthly bulletins to the city council, press, physicians, schools, and health workers, besides an annual report and in addition to the use of various health pamphlets furnished by insurance companies.

The attractiveness of the report is increased by the use of several photographs.

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Etiology of Scarlet Fever—Another demonstration of the possibility of producing typical scarlet fever experimentally by swabbing throats with culture of the scarlatinal streptococcus. This study was made in Manchuria.

TOYODA, T., *et al.* Experimental Production of Scarlet Fever by Means of a Scarlatinal Hemolytic Streptococcus. J. Infect. Dis., 48, 4: 350 (Apr.), 1931.

Scarlet Fever Prophylaxis—Scarlatinal streptococcus toxin can be rendered less toxic by subjecting it to heat and formalin without altering its antigenic properties. The number of doses of the treated product can be reduced.

VELDEE, M. V. Antigenic Value of Scarlet Fever Streptococcus Toxin Modified by the Action of Formalin. Pub. Health Rep., 46, 13: 693 (Mar. 27), 1931.

Decentralization of City Health Administration—Recounting the steps in the development of health districts in New York City as a means of perfecting a workable administrative scheme for a great municipality.

WYNNE, S. W. Neighborhood Health Development in the City of New York. Milbank Quart. Bull., 9, 2: 37 (Apr.), 1931.

NEWS FROM THE FIELD

ENTOMOLOGY LABORATORY MOVES

THE U. S. Department of Agriculture, Bureau of Entomology, Division of Insects Relating to Man and Animals, has moved its laboratory, formerly conducted at Mound, La., under Dr. W. V. King, to Orlando, Fla., with G. H. Bradley in charge.

ADVISERS ARE NAMED FOR NUTRITION STUDY

TWO Educators Appointed to Aid Government Research—L. B. Mendel, professor of physiological chemistry at Yale University, and E. B. Hart, professor of agricultural chemistry at the University of Wisconsin, two internationally known authorities on protein, vitamins and nutrition, have accepted appointment by the Department of Agriculture as advisers to its Protein and Nutrition Division in the Bureau of Chemistry and Soils.

The department called upon these authorities for their advice and suggestions as to how its work on nutrition may be improved, and to assist the staff of the Protein and Nutrition Division in strengthening the important lines of work now under way.—*U. S. Daily*, Apr. 24, 1931.

DR. HARRIS

DR. LOUIS I. HARRIS has severed his connection with the National Dairy Products Corporation, and for the time being is devoting himself to writing. He stated that he expects to remain in retirement until he finds a type of consultation work in public health administration or other public health work which will be congenial.

Dr. Harris entered the Department of Health of the City of New York in 1907 as a civil service employee and continued in that service in a variety of capacities, organizing the Division of Industrial Hygiene in 1914 and directing its work until he became Director of the Bureau of Preventable Diseases in 1917. In 1926, Mayor Walker selected him from a list of public health workers nominated by the New York Academy of Medicine, and he served for nearly three years as Commissioner of Health of the City of New York.

He has been active in the affairs of the American Public Health Association. He served as Chairman of the Health Officers Section, as a member of the Governing Council, member of the Executive Board, and as First Vice-President of the Association in 1930. He was Chairman of the Committee on Cooperation, Development and Finance, which formulated the plans and policies which the Association is now following.

HOSPITAL CARE FOR MENTAL PATIENTS

THE National Committee for Mental Hygiene, Inc., of New York, sent questionnaires to some 600 hospitals, asking for information as to the existence of clinics and psychopathic wards or departments where examination or treatment might be given to mental patients.

Of the 421 hospitals that replied, 122 reported special facilities; 17 reported incidental services; and a total of 3,298 beds for mental patients was reported by 53 of the 56 hospitals that have special wards.

Of the 122 hospitals that reported special facilities for mental patients, 56

have special mental wards; 97 reported clinics; 31 reported both wards and clinics; 25 reported wards only; and 66 reported clinics only.

THE ARIZONA PUBLIC HEALTH ASSOCIATION MEETING

THE Arizona Public Health Association held its fourth annual meeting at Nogales May 5 and 6.

WESTINGHOUSE AWARD

DR. C. M. SLACK, Research Engineer of the Westinghouse Lamp Company, recently received the "Award for Outstanding Accomplishments" and the accompanying $500 in cash for the development of a glass bubble to be used as a window in the Lenard Ray Tube. This award is given each year by the Westinghouse organization for the most important changes either in manufacturing methods or the design of a product made by the company. Lenard Ray Tubes are used to produce high speed electrons or Lenard Rays outside the generating tube for experiments in the field of chemistry, biology, and luminescence.

SIGHT-SAVING CLASSES THIS SUMMER

FOUR universities will offer courses for the training of teachers and supervisors of sight-saving classes this summer. The courses will be as follows:

Tulane University, New Orleans, La., June 15 to July 24

University of Chicago, Chicago, Ill., June 22 to July 24

State Teachers College, Buffalo, N. Y., June 29 to August 7

Teachers College, Columbia University, New York, July 6 to August 14

PERSONALS

FRANCIS E. FRONCZAK, M.D., F.A.P.H.A., attended the meeting, May 19 to 24, of the Royal Institute of Public Health in Frankfurt-am-Main, as an official representative of the A. P. H. A. In the same capacity he will attend the International Hospital Congress in Vienna and Budapest, June 8 to 14.

ALFRED F. HESS, M.D., pediatrician, member A. P. H. A., was elected one of the new members of the American Philosophical Society at its meeting in Philadelphia on April 24, 1931.

H. T. G. NAUMANN, City Chemist of Port Huron, Mich., member A. P. H. A. since 1917, died January 30, 1931.

JANE H. RIDER, State Sanitary Engineer, Tucson, Ariz., was recently elected an associate member of the American Society of Civil Engineers. This signal honor has been awarded to only one other woman in the United States.

HENRY A. ROWLAND, for the past 16 years Secretary of the Department of Public Health of Toronto, Ont., Canada, and member A. P. H. A., has been appointed Superintendent of the Riverdale Isolation Hospital, at Toronto.

EDGAR B. KAY, of Washington, D. C., member A. P. H. A., former dean of the School of Engineering of the University of Alabama and former chief of the Hydraulic and Sanitary Division, Quartermaster's Office, U. S. A., died April 20, 1931.

DR. JOHN A. WESSINGER, of Ann Arbor, Mich., has just been re-appointed City Health Officer for a term of 3 years, this being his ninth re-appointment, Dr. Wessinger having served 24 years up to the present time.

CONFERENCES

June 8–12, The American Medical Association, Philadelphia, Pa.

June 14–20, National Conference of Social Work, Minneapolis, Minn.

June 15–20, First National Conference of the American Association of Public Welfare Officials, Minneapolis, Minn.

June 18–19, Pennsylvania Public Health Association, Harrisburg, Pa.

June 22–27, American Home Economics Association, Detroit, Mich.

June 23–24, Fifth Annual Conference of the Pennsylvania Sewage Works Association, State College, Pa.

June 27–July 4, National Education Association, Los Angeles, Calif.

June 28–July 3, Second World Conference on Crippled Children, The Hague, The Netherlands.

June 29–July 1, New York State Conference of Health Officers and Public Health Nurses, Saratoga Springs, N. Y.

July 27–August 2, The World Federation of Education Associations, Denver, Colo.

July 26–31, Third Congress of the Pan American Medical Association, held under the auspices of the Mexican Government, City of Mexico, Mexico.

September 14–17, Sixtieth Annual Meeting, American Public Health Association, Montreal, Canada.

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